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Early Reports of Flood Damage Exaggerated

Paper and Pulp Mills In Various Sections of Country Speed Repair Work and Resume Operations—Losses Through Interrupted Production, Property Damage and Destruction of Finished Products, Less Than Anticipated

Although the paper industry suffered serious losses during the past week through interrupted operations, property damage, and destruction of finished products, due to the recent flood conditions in various sections of the country, latest information shows that early reports of the extent of the damage were grealy exaggerated.

A preliminary tabulation of the returns by the American Paper and Pulp Association indicates that in the New England States, 39 companies operating 59 mills with a total daily capacity of 2,352 tons reported a total loss of 197 days' operations with an equivalent capacity loss of 13,839 tons. Mill property damage amounted to $321,375 and loss of finished products in stock reached a total of $30,585.

In the Middle Atlantic States, 67 companies operating 87 mills having a total daily capacity of 5,252 tons reported a total loss of 208 days' operations or an equivalent of 9,587 tons. Mill property damage amounted to $98,500 and loss of finished products in stock was $98,518.

Brown Company Plant Resumes

Nearly one thousand workers, temporarily laid off on account of flood conditions, received the welcome news from the Brown Company of Berlin, N. H., to return to their jobs March 23, as the Burgess and Cascade Sulphite plant, which had been closed for four days on account of the dirty waters, would resume operations.

Word comes from Hinsdale, N. H., that the White-Washburn tissue and paper towel plant on the Ashuelot River was badly damaged.

At the plant of the Nashua Paper Box Company, in Nashua, N. H., water filled the basement, coming up to the machine room floor. A great deal of damage was caused, including the waste stock. The concern will probably operate in full soon.

The Livermore Falls (Me.), mill of the International Paper Company, where the Otis dam gave way, was reported speeding repair work with the expectation of reopening within a few days.

Flood waters bearing ice and lumber caused serious damage at the Pejepscot Paper Company mill at Brunswick, Me.

Connecticut River Conditions

The Holyoke Water Power Company which furnishes the power to the Holyoke paper mills sent out last week the following detailed description of the Connecticut River flood:

On the morning of Friday, March 13, a tremendous amount of floating ice cakes struck a sheet of solid river ice a short distance below the Boston and Maine Railroad Station at Mount Tom Junction. This large quantity of floating ice cakes, having met an irresistible obstruction, piled into a solid mass at the edge of the ice sheet and progressively filled the entire Connecticut River bed upstream for a distance of over a mile.

It is estimated that this solid mass of ice averaged 800 ft. in width and incidentally interfered with the discharge of the Manhan River which enters the Connecticut at the Boston and Maine Railroad Bridge just above Mount Tom.

As soon as the natural channel of the river became obstructed, the flood flow, which was about 100,000 cubic feet per second, made its way across the Hockanum meadows, entering the Connecticut River a short distance below the ice jam.

While large quantities of broken ice reached Holyoke across the Hockanum meadows from the north during the past few days, no ice left the jam at Mount Tom Junction until 7 o'clock Sunday night.

Men, under the direction of Stephen T. Callahan, agent for the Boston and Maine Railroad, who had been stationed at the jam day and night since early Friday morning, advised all interested parties at once that the jam was breaking up and that ice was on its way to Holyoke.

Since early Friday morning preparations had been made by the engineers of the Holyoke Water Power Company, to sandbag the abutments at both the Holyoke and South Hadley ends of the dam, so that, in the event that a large quantity of water was released by the ice jam, the surge which would be caused thereby, would not do property damage.

During Sunday afternoon, although the flow over the dam remained about constant, at 9.6 feet in depth, the level of the river at the Hockanum meadows, for some unexplainable reason, dropped more than 6 feet, thus reducing the volume of water which had been held back by the ice.

It took just one hour for the ice to travel from Mount Tom Junction to the Holyoke dam. It is computed that the ice traveled at the rate of 9 ft. a second. Some idea

(Continued on page 25)

Price Bros. Shareholders' Reorganization Plan

Proposals of Syndicate of English and Canadian Interests Presented to Trustee In Bankruptcy—Will Be Submitted by Him to Various Groups of Creditors and Security Holders—Committees Efforts to Save Property

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., March 30, 1936.—A special meeting of the creditors of Price Bros. & Co., Ltd. (in bankruptcy), including preferred and common shareholders, has been called for April 29, at the head office of the company in Quebec, for the purpose of consideration and passing on a scheme of arrangement advanced by the company for the reorganization of the company's affairs. The gathering is called under the terms of the Bankruptcy Act, while later in the day preferred and common shareholders will hold separate meetings, under the terms of Quebec Companies' Act, to pass on the same plan.

The Hon. Lordon Scott, trustee, in a notice calling the meeting, says:

"You will remember that the previous two proposals for schemes of arrangement submitted to the creditors at meetings held in March and June, 1934, were accepted almost unanimously by the unsecured creditors and common shareholders, present in person or represented by proxy at these meetings, but were rejected on the vote of the preferred shareholders. The scheme now being submitted has, however, already received the approval of the Preferred Shareholders' Protective Committee and is recommended by them to the holders of those shares.

"For your information I wish to report that I received an offer dated February 20, 1936, from Pacona Ltd., upon the fulfillment of the conditions of which sufficient cash would have been provided to pay in full to the bondholders the principal and arrears of interest of their bonds and a substantial payment to the unsecured creditors which might or might not amount to 100 per cent. of their claims, depending on the disposition made of the Price Realty and some other claims. This proposal made no provision for either the preferred or common shareholders.

"The proposal now submitted for your acceptance provides substantially as follows:

"(a) Arrears of interest on outstanding bonds to be paid in full in cash.

"(b) The present bonds to be reinstated but with certain modifications as regards sinking fund requirements, etc.

"(c) Payment to unsecured creditors in cash of a sum estimated to provide one hundred cents on the dollar of their admitted claims, without interest.

"(d) Exchange of the present preferred shares, share for share, for new preferred shares of the same par value with somewhat modified rights, together with two and one-half shares of new common stock for each present preferred share, as consideration for wiping out several years' accumulated dividends and such modifications.

"(e) Exchange of the present common shares for new common shares on the basis of three new shares of no par value for every four shares of $100.00 par value now held.

"(f) Rights to holders of present preferred and common shares to subscribe, on terms set out in the proposal, to units of the second mortgage convertible debentures and new common shares of no par value."

The plan provides for the introduction of $7,500,000 new capital by way of second mortgage debentures, convertible into common on the basis of seven shares per $100 debenture, and carrying a bonus of three and one-half shares of common per $100 debenture. Shareholders will be given the right to subscribe for the debentures on the foregoing basis, but whether they exercise their right or not, the company is guaranteed the amount in question by the underwriting of a strong group of Canadian and English bankers and industrialists.

The new capital so supplied will enable the company to re-instate its first mortgage bonds by paying arrears of interest (some $2,700,000) in cash, paying unsecured creditors in cash, including Duke Price Power Company's claim of about $1,000,000, and confirming the existing long term power contract with that company.

Preferred shareholders retain their 6½ per cent. shares at full value, waive arrears of dividends and receive in compensation therefor two and one-half new common shares per share of preferred. Common shareholders receiving three new common in exchange for four old, giving them in the aggregate about thirty-three per cent. of the equity of the reorganized company, which percentage will be increased to over fifty per cent. if they exercise their rights to subscribe to the new debentures.

A part of the plan is that bonds of the Price Realty Company—the subsidiary owning Price House in Quebec—will be paid off at 75 cents on the dollar, title to Price House thereby reverting to the parent company. Bondholders' Protective Committee of Price Realty Company, representing a substantial majority of the bonds, have agreed to this arrangement.

In the course of the proposal it is indicated that the company has obtained undertakings from Canadian Chartered Securities, Ltd.; Royal Securities Corporation, Ltd.; Wood, Gundy & Co., Ltd.; W. C. Pitfield & Co., Ltd.; Drury & Co.; R. O. Sweezy & Co., Ltd.; Investments, Ltd.; Bowater's Paper Mills, Ltd., and Kitcat and Aitken, that in the aggregate they will purchase or cause to be purchased the $7,500,000 of six per cent. second mortgage debentures.

B. C. Pulp and Paper Co.

British Columbia Pulp and Paper Company reports an operating profit of $224,423 for 1935 compared with $685,214 in the preceding fiscal period. Income from investments amounted to $31,682, compared with $29,877 in 1934. Profit on sales of investments was $8,170 and profit on bond redemption $43,579. Deduction of depletion allowance, directors' fees and other charges left net earnings of $264,128, contrasting with $702,933. Net loss for the year was $256,738, after depreciation of $200,000 and bond interest of $320,866. Loss in the preceding year was $21,620.

Deficit as at December 31, 1934, was $804,538 and additions of an adjustment for prior years and net loss for the 1935 period increased deficit to $1,088,376.

President Killam in his report to shareholders says in part: "During the year it became necessary to seek new customers in a number of different countries, due to shipping troubles which developed on the Pacific Coast, and which caused several steamship companies to cancel services to Canadian ports. Also, the imposition of a pro-

hibitive tariff prevented sales to one country over the latter half of the year, and financial difficulties in another greatly reduced the tonnage which otherwise might have gone there. The changes to less natural markets, necessarily, had a very great effect on the possible earning for the year, which will, to some extent, be reflected in the results for the early part of 1936, but it is reasonable to assume that somewhat better conditions may be anticipated for the remainder of the current year."

Decrease in Pulpwood Cut

A 28 per cent increase in the cut of saw-logs and a 44 per cent decrease in the pulpwood cut on Crown lands in New Brunswick for the year ending August 1, 1935, was set forth in the annual report of the Department of Lands and Mines tabled in the Legislature. The report also told of an increase of 15 per cent. in the number of cords of pulpwood manufactured in the six pulp mills of the province in the calendar year of 1935 and a 43 per cent. increase in the cut of ties and poles.

It is estimated by G. H. Prince, Deputy Minister of Lands and Mines, in his report to the Minister, that the total cut on Crown lands for the year ending August 1, 1936, would be between 150,000,000 and 160,000,000 feet.

The pulpwood cut on Crown lands during the year was 129,317 cords compared with 230,197 cords in the previous year, or less by 101,380 cords. The cut of saw logs was 136,000,000 feet compared with 107,000,000 for the previous year, representing an increase of 30,000,000 feet.

Murray Bay Plant May Reopen

It is stated here that arrangements are being made to reopen the newsprint mill of the Murray Bay Paper Company at Murray Bay, Que. This property, which once formed part of the Abitibi set-up, reverted to the Donahue Brothers some time ago. It is understood the plant has been leased for a period of two or three years to Hearst, with an option to extend the lease to 10 years.

Howard Smith Profits Rise

The financial statement of Howard Smith Paper Mills and Subsidiary companies for 1935 reveals net operating profit of $1,885,142 as compared with $1,822,509 in 1934 and $1,655,265 for 1933. Harold Crabtree, the president, in his report, said:

"It is pleasing to report that business conditions throughout most of the year showed a reasonably steady improvement in which your company and subsidiaries shared.

"Notwithstanding somewhat lower average selling prices and an upward trend in the cost of raw materials, the profits from operations increased $62,632.51 while the net earnings increased $118,488.86 over the previous year. Bank and other loans were reduced during the year by $100,000. Bonded indebtedness was reduced during the year by $315,800, while holdings in the bonds of your company and its subsidiaries increased by $134,253.83. After giving effect to the payment during the year of a deferred liability amounting to $120,458.55, the working capital shows an increase of $311,449.79.

Pulp, Process & Development, Inc., Formed

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, March 31, 1936—Pulp, Process and Development, Inc., has been granted incorporation papers by the secretary of state, Columbus, and authorized to issue 240 shares of no par value stock. Incorporated by C. D. Altick, L. D. Smiley and E. T. Turner, the firm will develop processes and machinery for pulp and pulp products.

Specifications Committee to Meet

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 1, 1936—At a meeting of the Joint Congressional Committee on Printing last week the Committee on Paper Specifications was appointed to draw up specifications for bids to be opened for the supply of paper for the Government Printing Office beginning July 1 next.

While nothing official has yet been done in this connection it is generally expected that bids will be opened on May 25 with awards to be made one week later, June 1. The specifications committee will probably meet this week sometime.

The specifications committee is composed of the following; F. P. Veitch, senior chemist, Bureau of Chemistry and Soils, Department of Agriculture, chairman; B. W. Scribner, chief, paper section Bureau of Standards; Arthur H. Smith, chief, printing and duplicating subdivision, Veterans Administration; Ernest E. Emerson, purchasing agent, Government Printing Office; William H. Kervin, superintendent of stores and traffic manager, Government Printing Office; Morris S. Krantrowitz, technical director, Government Printing Office; James M. Cathcart, inspector of paper and material, Joint Committee on Printing and Ansel Wold, clerk of the Joint Committee on Printing, secretary.

Boston Paper Business Fairly Active

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 30, 1936—With conditions after the flood catastrophe approaching normal again, paper merchants transacted a moderate volume of business last week. Railroad and motor truck service has resumed to a considerable extent, and while not yet 100 per cent, it is nearly that. Deliveries west of Boston have been held up, but are now better. In some quarters, it is stated that the only difficulties are in special orders to be prepared and a shortage of stock items from eastern mills. Shipments from Holyoke and Springfield are coming in rather well, but the trade is still handicapped somewhat by a delay in shipments from Maine and New Hampshire. It is expected that by the end of two weeks the situation will be largely in good shape.

Many large consumers of paper lost their supplies during the flood, so that the prospect seems favorable for a demand for replacement.

In fine paper, prices are advancing on Nos. 4 and 5, coated paper and a general revision of prices is expected April 1 to those which were current February 1. The outlook for wrapping paper for the coming week is good.

With a number of paper box manufacturers affected by the flood, the box board industry was not helped, for the time at least, but with the rehabilitation of factories, some orders are expected. For the week, box board was quiet.

Deny Bemis Brother Bag Co. Petition

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, March 30, 1936—The petition filed by the Bemis Brother Bag Company, St. Louis, Mo., and Memphis, Tenn., for rehearing of a motion for a temporary order to restrain Charles N. Feidelson, Atlanta, Ga., Regional Director of the National Labor Relations Board, and others from conducting a hearing on a complaint charging the company with unfair labor practices, was denied the past week by Charles H. Moorman, presiding judge of the United States Circuit Court of Appeals, sitting in Cincinnati.

Kimberly-Clark's Net Earnings Satisfactory

Reports to Shareholders Shows Profits for Year 1935 Were $454,614.09—Equals 93 Cents a Share on 487,173 Shares—Sales Greater In Both Dollars and Volume—Outlook for Remainder of Year Considered Promising

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., March 30, 1936—Net earnings of the Kimberly-Clark Corporation, Neenah, Wis., for the year 1935 were $454,614.09, according to a report presented by F. J. Sensenbrenner, president at the annual meeting of stockholders last week. This amount is equal to 93 cents a share on 487,173 shares of common stock outstanding. This figure represents the net after deducting $1,273,926.69 for depletion and depreciation for the company and its wholly owned subsidiary, the William Bonifas Lumber Company, and after all taxes, bond interest, and dividends on preferred stock.

Interest paid on bonds for the year totalled $370,421.40, and the dividends on outstanding preferred stock were $597,780. Expenditures also were made in 1935 to the amount of $957,026.36 for improvements and additions to property. It was stated in newspaper reports that approximately $1,000,000 would be spent for improvements in 1936, but Mr. Sensenbrenner stated the exact figures would not be available for several weeks.

The corporation's financial condition was cited as satisfactory, with current assets in the ratio to current liabilities of 3.65 to 1. The outlook for the remainder of 1936 is promising, the report states, although increased taxes of every kind, especially through social security legislation, will have some influence on earnings.

Sales were greater in both dollars and volume in 1935. Dollar sales increased slightly over 22 per cent. In volume, standard grades of paper had a sales gain of 12½ per cent, and the specialty grades nearly 32 per cent.

Patten Paper Co. Control

Inability of George C. Newton, Iron Mountain, Mich., to raise $640,000 in cash, and of Paul V. Cary, trustee of the Patten Paper Company, Ltd., Appleton, Wis., to turn over 40,000 shares of stock prevented the sale of the controlling interest in the Northern Paper Mills, Green Bay, Wis., within the time limit set by the United States Circuit Court of Appeals, Chicago. These parties were given until Saturday, March 21, to consummate the deal.

Mr. Cary returned to W. P. Wagner, as trustee for the Northern directors, 13,000 shares of stock which had been turned over to him for a five-day period in accordance with the court's order. It is now possible, under the court's order, for the Northern directors to vote this stock at the annual meeting of stockholders April 4, but it was understood this right would be challenged before that time.

Authority for the deal was given by the federal court at Milwaukee so as to complete a reorganization of the Patten Company, which with Mr. and Mrs. Judson G. Rosebush formerly held the controlling interest in the Northern. Mr. Newton represented a group of Chicago financial syndicates which intended to obtain the stock as an investment, but he failed to deposit the cash with the Marine National Bank of Chicago within the allotted time.

New Paper Tube and Core Plant

The Mack Paper Tube and Core Company, a newly organized Wisconsin corporation, has taken over the second floor of the John Strange Pail Company, Menasha, Wis., and is installing equipment for the manufacture of paper tubes, paper cores, and fibre cans. Operations were expected to be started about April 1.

The immediate market for the company's products will be the paper mills of Wisconsin, Michigan and Minnesota. A large market also is expected to be developed among fabric mills, and among heavy users of mailing tubes.

Incorporators of the company are J. W. McLaughlin, Ethel S. McLaughlin, and Ambrose Owen.

Tomahawk Mill May Be Sold

Plans of the Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., to dismantle the defunct paper mill of the Tomahawk Pulp and Paper Company, Tomahawk, Wis., have been held in abeyance temporarily pending an attempt to sell the mill. The Consolidated was arranging to purchase the machinery and use it in its own mills.

Citizens of Tomahawk have interested themselves in obtaining a purchaser who will operate the mill so the city does not lose the industry. A committee has been appointed to carry on negotiations, and has been given until June 20 to carry out its plans.

It was reported that the Wisconsin Public Service Corporation received a clear title to mill property at the dam site when it purchased the power dam located there. Protests were filed with the company, and assurance was given that the property would be transferred to a purchaser if one were found by the stipulated date.

Prospective purchasers will be notified immediately and invited to exercise their options.

Failing in this, the committee will contact various catalogue paper users with a view of having them take over the mill for operation.

Forest Products Appropriation

An appropriation of $1,000,000 for the United States Forest Products Laboratory at Madison, Wis., has been voted by the United States Senate by passage of the agriculture department supply bill. The House has refused the request for this amount, and had voted $499,000. The bill has been sent back to the House for approval of this and other amendments, or for appointment of conferees by both houses to iron out the differences. A larger appropriation was sought so that the laboratory could expand its research in the field of wood utilization.

Paper Shipments Delayed

Shipments of paper from Wisconsin mills to the eastern regions affected by floods have been held up pending resumption of rail transit. Advices received by mills were to the effect that the lack of light and power in warehousing districts, especially in the Pittsburgh area, prevented the movement of freight. Some deliveries are being held at mills, while others are detained by railroads outside the stricken zones. While flood conditions have been prevalent in the Mississippi River section of Wisconsin, precautions taken at other points have prevented any difficulty in paper manufacturing sections.

Sluicing was started early enough to take care of the heavy volume from spring thaws.

Diary of a TELETYPEWRITER at Kimberly-Clark

THE general office of Kimberly-Clark Corporation at Neenah, Wisconsin, is connected with the Chicago sales office by Bell System Private Line Teletypewriter Service—and with the Niagara Falls mills by Teletypewriter Exchange Service.

To show how the various departments depend upon the speed and accuracy of "typing-by-wire," here are lists of subjects comprising part of a typical day's flow of communications between Chicago and Neenah—the Diary of a Teletypewriter.

SALES DEPARTMENT

Book Paper Group

1. Quick delivery requests.
2. Car number requests.
3. Instructions on special orders.
4. Customer inquiry on products.
5. Demurrage charge inquiries.

Specialty Paper Group

1. Orders—ship today.
2. Requests for rulings on trade customers.
3. Customer inquiries on delivery dates.
4. Items to be added to orders.
5. Salesmen's route changes.

Crepe Wadding Group

1. Specifications.
2. Stock on hand at mill.
3. Asking Niagara ship special orders.
4. When specific carload ready.
5. Passing rush orders.

PURCHASING DEPARTMENT

1. Ordering repair parts.
2. Purchase of operating supplies.
3. Change in production methods and equipment.
4. Asking date repair parts will be shipped.
5. Specifications for maintenance part.

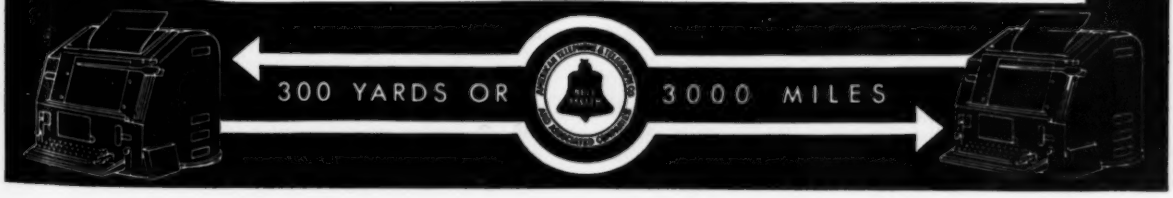
TRAFFIC DEPARTMENT

1. Car route and freight charges.
2. Checking shipments leaving mill.
3. Locating cars en route.

ADVERTISING DEPARTMENT

1. Checking delivery of paper stock for advertising.
2. Miscellaneous information.

Champion, Munising, Nekoosa, and many other paper companies use Bell System Teletypewriter Service. It speeds up communication, helps to prevent errors with accurate written records of every message, and assures better, faster customer service. Your business can probably use it profitably. Call the local Bell Company.



Paper Industry Outlook Improves In Chicago

Despite Delayed Shipment Due to Recent Floods, Demand for Various Grades of Paper Is Quite Active—With Higher Prices Effective April 1, Book Papers Are In Excellent Request—Other Grades of Paper Steady

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., March 29, 1936.—With the confusion resulting from shipments delayed on account of flood conditions about out of the way, the Chicago paper market now looks forward to a satisfactory improvement in business carrying on from the sales records of January, February and March. Book papers continue to be probably the most active on the list here as buyers prepare for the increase in price effective on April 1. Other grades are also retaining a steady position with inquiries reported as holding up very well. Sulphite bonds reported a strengthening in fundamental position while the entire fine paper market continued to hold well and expand with a new volume of Spring business. Groundwoods found price improvements holding firm with the demand satisfactory. Little change was noted in the newsprint market. Covers were reported as more in demand. Paperboard markets were stronger with some firms quoting appreciably higher prices in certain grades of board. Waste papers were not so strong as suppliers found a market fairly well surfeited with waste materials.

News of the Industry

Alfred Kauffmann has been elected president of the Link-Belt Company, supplier to the paper industry, succeeding George B. Torrence who resigned. Mr. Kauffmann, in taking the presidency, resumes a position he held from 1924 to 1932. He has been with Link-Belt for 35 years, beginning as a draftsman after graduation from Stevens Institute. For the past four years Mr. Kauffmann has been in charge of the Chicago plant, the headquarters of the company. Mr. Torrence has not as yet announced his future plans. Four new board members were elected, including Wellington Wells, J. Reece Lewis and B. A. Bayman. The board declared a quarterly dividend of $1.62½ cents a share on the preferred stock, payable July 1.

The Swigart Paper Company took a prominent part in the showing of the film "Paper Making" at a recent meeting of the Society of Typographic Art, which was widely attended by printers, advertising men, paper men and supply representatives. Presented by the Hammermill Paper Company with a running talk supplied by John Forster, of Swigart, the entertainment was well accepted by the audience. T. N. Fairbanks, eastern paper importer, also appeared on the program and precipitated a lively debate on the merits of hand made and machine made papers. A Swigart display of Hammermill papers was another feature of the evening meeting.

Another well known Chicago sales representative, George B. Bond, International Paper Company, died at his Chicago home earlier this month. Mr. Bond was with International for over five years and prior to that time had been identified with the Messinger Paper Company and the Butler Paper Company, both of Chicago.

Harold Knott, Eastern Manufacturing Company sales executive, with headquarters in the Conway Building, Chicago, has just returned from a two weeks business tour of the south and southwest, including San Antonio, Houston, Tulsa, Oklahoma City, Shreveport, New Orleans and Kansas City. He reports an almost universal feeling that the paper business is on the upward trend with those interviewed reporting good business in January and February and March.

The action of Illinois retail merchants in adding the 3 per cent Occupational Tax to each retail sale as an expense item is now being followed by at least one Chicago paper jobber. Bradner Smith & Co., in their latest release to the trade, have included a statement which reads as follows: "All quotations are made and sales consummated subject to the purchaser assuming any revenue and sales taxes imposed by local, State or Federal governments." It is undoubtedly true that local paper jobbers are confronted with the same experience as the retailers—that absorption of a 3 per cent charge in a higher markup is an impossibility. Bradner Smith & Co. also points out that a plain statement of added cost is preferable to complications which might arise from hidden costs.

E. B. Sheaffer, headquartering in the Conway Building, has been made sales representative in the middle west for the Carew Manufacturing Company, of Massachusetts, makers of a well known line of rag bond and ledger products. Mr. Sheaffer, who will also continue to represent the Vermont firm of Missisquoi Corporation, will cover the middle western territory extending as far east as Pittsburgh, west as Denver and south as New Orleans.

A Chicagoan, J. V. Spachner, of the Chicago Mill Paper Stock Company, was honored at the March 18 meeting of the National Association of Waste Material Dealers, Inc., by being re-elected a second vice president of that organization.

At least two well known Chicago firms, the Chicago Belting Company and the Crane Company, have signified their intentions of exhibiting at the annual convention of American Pulp and Paper Mill Superintendents to be held at Grand Rapids, Michigan, on June 24, 25 and 26. The pulp and paper exhibit, in conjunction with the three day meeting, is expected to feature the event, according to F. L. Zellers, general chairman.

A novel method of drawing attention to Riegel Paper Company's newest Jute line is being utilized by the Swigart Paper Company. A folder printed on Riegel's Jute, 24 x 36-150 pound, carries a barometer, with actual metal hand, pointing to the various qualities of the new product and listing 25 uses for the product. "You Can't Lose—In Fact You Win at Every Turn" is the subject of the mailing which, of course, ties directly into the clock presentation.

To Meet at St. Catharines May 8 and 9

G. E. Rausch, of the Interlake Tissue Mills Company, Ltd., Merritton, Ont., and secretary of the New York-Canadian Division of the American Pulp and Paper Mill Superintendents Association, announces that there will be a joint meeting of the New York State Section of the Technical Association of the Pulp and Paper Industry and the New York-Canadian Division of the American Pulp and Paper Mill Superintendents Association at the Hotel Leonard, St. Catherines, Ont., on May 8 and 9.

Great Lakes Paper Co's Difficulties Settled

Minister of Land and Forests Peter Heenan Declares New Terms for Sale and Reorganization of Company Protect Public Interest and Satisfy Government—Receiver's Substitutional Contracts Effective July 1, 1936

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., March 30, 1936.—Prolonged differences between the provincial government and the newspaper publishers included in the Aldrich-Gefaell group have been overcome by amendments to the plan announced today by the Hon. Peter Heenan, minister of lands and forests. Under the new agreement no dividends can be paid until the market price of newsprint is at least $54.30 a ton. Today's market price is $41 a ton. It is claimed that the amended plan is a distinct improvement from the bondholders' standpoint.

"I am pleased to announce that a settlement of recent difficulties in connection with the sale and reorganization of Great Lakes Paper Company has been completed on terms which protect the public interest and which are therefore satisfactory to the government," Mr. Heenan stated today. "In reaching a settlement the receiver of the Great Lakes Paper Company and the publishers included in the Aldrich-Gefaell group agree that the date when the receiver's substitutional contracts become effective shall be extended from April 1 to July 1, 1936.

"With the removal of this impending threat the government was able to enter into discussions leading to amendments to the Aldrich-Gefaell plan and other assurances giving adequate protection against dangers which the government and the newsprint industry as a whole have opposed during the last few months. These amendments are also satisfactory to the representatives of Great Lakes bondholders and others concerned with the result that the settlement may be described as amicable in character.

"Under the Aldrich-Gafaell plan as amended no dividends can be paid until the market price of newsprint is at least $45.30 per ton compared with today's price of $41 per ton and dividends cannot be paid then if the payment of them will have the effect of reducing the market price below $45.30.

"The government has also been given assurances that the Aldrich-Gefaell contract will at no time disturb the market price and that the new Upper Lakes Pulp and Paper Company, successor to Great Lakes, will adhere to co-operative policy. The federal character of the new company will be replaced by an Ontario character, placing the company under provincial jurisdiction.

"With these amendments and assurances established, the government has no other objection to the Aldrich-Gefaell plan and as far as the government is concerned, there is now no obstacle to the plan. I believe that the amended plan is also a distinct improvement from the bond holders' point of view and that the newsprint industry and the public will regard the settlement as constructive."

Safety Association Annual

Addressing the annual dinner meeting of the Ontario Pulp and Paper Makers' Safety Association at the King Edward Hotel, Toronto, this week, the president, L. F. Winchell, cited a few key figures relating to the results during 1935 in the work of the association, and made particular mention of the splendid increase in number of teams participating in the annual first aid contest. He appealed to all workers in the pulp and paper industry to accept personal responsibility for accident prevention and to intensify their support of the management of the various plants and operations to that end.

D. B. Chant, secretary-engineer, in his report called attention to the fact that the accident frequency rates in both the mills and the logging operations of member firms were the lowest in the history of the association, but added that the severity rate was slightly higher than that for the previous year, although still well below the average for the past ten years.

The First Aid team of the Spruce Falls Power and Paper Company, Ltd., the winners of the 1936 annual First Aid contest, staged a demonstration of first aid attention to the victim of a hypothetical accident, which was remarkably well done. Later George Carruthers presented the Class A Accident Prevention trophy to Jens Thue of the Canadian International Paper Company, Hawkesbury; W. S. Barber presented the Class B trophy to W. F. Ireland of the Corrugated Paper Box Company; A. T. Brown presented the First Aid contest trophy to the First Aid team of the Spruce Falls Power and Paper Company, Kapuskasing.

Instructive and timely addresses were given by George Wilkie, K. C., chairman of the Workmen's Compensation Board, and by Earl Hutchinson vice-chairman of the Board.

The following board of directors were elected: J. H. Albert, J. R. Booth Company; B. F. Avery, Abitibi Power and Paper Company; John Ball Beaver Wood Fibre Company; W. S. Barber, Provincial Paper, Ltd.; George Barber, Spruce Falls Power and Paper Company; A. T. Brown, E. Pullan, Ltd.; George Carruthers, Sr.; Interlake Tissue Mills; W. L. Eliason, Ontario Paper Company; D. McLeod, Kenora Paper Mills, Ltd.; George W. Pauline, Alliance Paper Mills; T. E. Silver, Abitibi Power and Paper Company; C. B. Thorne, Canadian International Paper Company; N. E. Wainwright, Don Valley Paper Company; O. T. Whealy, Corrugated Paper Box Company; J. S. Wilson, Dryden Paper Company; L. F. Winchell, Hinde & Dauch Paper Company of Canada, Ltd.

Gair Co. Expands In Canada

Further expansion in Canada of Robert Gair Company, Inc., large United States paper box manufacturers, is announced, agreement having been entered into to purchase the physical assets of four additional companies and controlling interest in a fifth. The new acquistions are Dominion Boxboards, Ltd., Fibre Boxes, Ltd., York Paper Mills, Ltd., and Firstbrook Boxes, Ltd., all of Toronto. Controlling interest has been purchased in Dominion Envelope and Cartons (Western), Ltd., with plants at Winnipeg and Vancouver. Dominion Envelope and Cartons, Ltd., and Canadian Wrappers, Ltd., which is owned by interests associated with Dominion Boxboards, are not included in the purchase.

With acquisition of these companies, Robert Gair Company, Inc., through its subsidiary, Gair Company of Canada, Ltd., is strongly entrenched as an important factor in the paper box industry in Canada. On completion of the present deal, Gair Company will own eight Canadian paper box companies and control five others.

Demand for Paper Broadening in Philadelphia

Seasonal Improvement in Both Fine and Coarse Paper Divisions Not Materially Affected by Flood Situation—Several Pennsylvania Mills Adjacent to Schuylkill River Are Handicapped by Delay in Coal Deliveries

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., March 30, 1936—Restrictive forces which usually follow in the wake of floods have not materially affected activity in the paper trade here. The seasonal betterment in the fine and coarse divisions of the paper trade, which set in a few weeks ago, is broadening. And, considering the nervousness from the general tax situation, which obviously tends to have adverse effect on business generally, basic factors in the paper business situation are favorable to continued improvement.

Attention is called to the reduction of $4.00 per ton all along the line on roofing stock. Domestic No. 1 Roofing, which was bringing $2.00 to $2.05, dropped to $1.80 @ $1.85. This reduction in price is due to the mills, which, incidently, have a very strong organization, go out of the mill at this time of the year for a period of two to three weeks, with the resultant cutting of prices.

Board Plant Damaged by Fire

Fire at the plant of the Penn Fibre Board Corporation at York during the week, resulted in a loss estimated at approximately $10,000. The fire was believed by firemen to have been caused by spontaneous combustion in a pile of baled paper in the storage room. The plant is located southeast of the city, along the Maryland and Pennsylvania Railroad company's tracks. When volunteer crews of the Victory, Grantley and Friendship companies of the Spring Garden township fire department arrived at the scene of the blaze they were greeted by volumes of dense smoke. They succeeded in keeping the fire confined to the main storage room, which contained approximately 2,000 tons of waste paper. Company officials estimate the value of this waste at about $65 per bale.

The sprinkler system in the plant held down the blaze until the firemen arrived, but flames from huge piles of paper damaged the interior of the building.

Nearly a dozen streams of water were used by the firemen. A survey today revealed that the finished stock in the same part of the building was not ruined.

John H. Brougham, superintendent of the company, said the damage would be hard to estimate, but ventured that it may amount to about $10,000. He said the damage is fully covered by insurance.

Operations were curtailed for several hours but the night shift was later ordered to work by Mr. Brougham. The company employs 110 men in four shifts, processing about 100 tons of paper per day. This company suffered from another fire last summer when fire burned in the ventilator of the main machine room. After the departure of the Victory Fire Company, employes of the plant kept a water line in use to prevent a recurrence of an open blaze.

News of the Industry

The rise in the Schuylkill River here in Philadelphia caused no serious inconvenience to the mills in this vicinity. It was, however, learned that the mills hereabouts are suffering from want of coal delivery due to shipping conditions throughout the flood area.

Charles McDowell, of McDowell Paper Mills, Manayunk, has just returned from a three weeks' cruise in Florida waters on his yacht "Charmarie."

Joseph F. O'Neill, of Patrick O'Neill Sons, 408 South Sixth street, was in attendance at the dinner of the National Association of Waste Material Dealers, held in the Hotel Astor, New York, on March 18.

J. Norman McDowell To Be Sales Manager

HOLYOKE, Mass., March 31, 1936—The Carew Manufacturing Company of South Hadley Falls, Mass., has appointed J. Norman McDowell of Holyoke, Mass., sales manager of the company.

Last December the Carew Manufacturing Company acquired Old Hampshire Bond and other rag papers formerly made by the Hampshire Paper Company.

Mr. McDowell, a graduate of Princeton University and a machine gun officer with combat service in France during the World War, has been connected with the Carew Manufacturing Company in a sales capacity since 1927. For several years previous he was eastern salesman for the Fox River Paper Company of Appleton, Wis. Prior to this, Mr. McDowell had some years of manufacturing experience with the Windsor Locks Paper Mills Company, Windsor Locks, Conn.

American Writing Plan Approved

The protective committee for holders of first mortgage 6 per cent gold bonds of American Writing Paper Company, Inc., headed by D. Samuel Gottesman, of Gottesman & Co., 22 East 40th street, New York, as chairman, last week announced that it had adopted and approved the plan of reorganization proposed by the company under Section 77B of the Bankruptcy Act.

The committee stated in a letter to holders that "it is the purpose of the committee to accept the plan in behalf of all bonds of the company deposited with the committee and in their behalf to take all such action as may be necessary or advisable to give effect to the provisions of the plan."

R. M. True Goes with Blandin Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., March 31, 1936—Announcement was made last Friday that Robert M. True, assistant superintendent of the Crocker-McElwain Company, had resigned to accept a position as technical director for the Blandin Paper Company at Grand Rapids, Minn. He will leave Holyoke about April 15. Mr. True has been assistant superintendent at the Crocker-McElwain mill since 1933.

Duriron Heat Exchanger

The Duriron Company, Inc., Dayton, Ohio, has just issued Bulletin No. 173, which describes the Duriron heat exchanger. This heat exchanger is made available in any of the Duriron Company's corrosion-resisting alloys—Duriron, Durichlor, Durimet, Durco Alloy Steels, Alcumite. Bulletins descriptive of each alloy are available upon request.

Hollingsworth & Whitney Co. Makes Numerous Improvements to Mills in Maine

Recognizing the depression period to be an ideal time for the inauguration of a plant improvement program, Hollingsworth & Whitney Company planned, and has recently completed an extensive four-year schedule of installations to its mills in Maine including some of the most efficient and modern equipment known to the industry. After an extensive study, the ideas of the Hollingsworth & Whitney Company research and engineering staffs were combined with the best American and European thought.

Changes in Pulp Department

Affecting the pulp departments alone, nine important changes have taken place, all contributing to the excellence of the finished product so essential for the manufacture of superior papers.

Attention was first focused on the proper selection and preparation of base materials. The initial step was the establishment of a system of super-inspection of the peeled and disc-barked logs for quality, which results in the elimination of foreign materials detrimental to quality.

Next, the shaker chip screens were replaced with roatry chip sorting and dust eliminating screens, in which were incorporated unique developments assuring the desired uniformity and cleanness of the chips. The entire sulphite mill was remodeled, to provide a flexible system which can produce pulps for both extra strong bleached and unbleached grades, to completely satisfy the many needs of the company's customers.

A Section of the New Bleaching Plant

Larger Battery of Knotters Istalled

To obtain the most effective preliminary cleansing of the pulp, a larger battery of bronze knotters was installed, which remove all knots and pieces of undigested wood in the pulp stream flowing from the blowpits.

Riffler System Added

Following this, a huge, modern type, felt lined riffler system was added, to thoroughly settle out and remove tiny specks which would pass through even the finest screening system.

A Section of the Riffler System

To meet today's critical demands, a new screening system of the latest approved design was installed, including the most modern style of inclined flat screens. The chromium plated bronze screen plates which form part of this installation contain very fine slots, through which the accepted fibres must pass.

New Bleaching Plant Erected

An entirely new bleaching plant was erected, said to be the finest in the world. The construction and operating procedure incorporates the soundest and most advanced ideas in American and European practice. To protect the pulp from contamination, glazed tile vats, copper piping, and rubber-covered equipment are included, along with many innovations contributing to the general efficiency of this plant.

The unsurpassed cleanness resulting from these improvements was protected by the construction of deep sand filters which, with the existing supply of finest artesian well waters, furnish the pulp and paper mills with clear water. Increasing power demands required the establishment of a million dollar, high pressure steam plant to adequately provide an ample supply of steam. In addition to extensive improvements in its pulp departments, Hollingsworth & Whitney Company has made exceptional progress in its paper-making departments and other units of the organization.

Michigan Superintendents Meet at Kalamazoo

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich., March 31, 1936—The Michigan Division of the American Pulp and Paper Mill Superintendents' Association held their March meeting at the Park-American Hotel on Thursday evening, March 26, at 7 o'clock. With fifty present, dinner was served, the meeting following. Chairman Otto Fischer presided and after calling the meeting to order introduced G. W. Cragie, field secretary of the National Association.

Remarks by Mr. Cragie New Field Secretary

Mr. Cragie, in his opening remarks, explained that his was a newly-created position, sponsored by the executive board and conflicting in no way with that of the National Secretary, "Bob" Eminger. His work is personally to contact all the State divisions and endeavor to make the association more useful to the members. He will solicit ideas from the different divisions as to the best method of rendering this service, these to be compiled into a report which will be submitted to the National Convention in Grand Rapids, Michigan, June 17, 18 and 19.

The matter of questions which are sent to the National Secretary was brought up by Mr. Cragie and he stated that a more satisfactory plan was being worked out to take care of them. The idea of creating a clearing house for the superintendents' problems submitted, is the motive in mind. He urged the members to use the association in this connection as that was its primary function.

F. L. Zellers Speaks

F. L. Zellers of the French Paper Company, and general chairman of the National Convention, then addressed the members and outlined in detail the convention program as prepared by his committee. It surely looks like the members will be royally entertained by the most constructive program ever attempted by the association. Mr. Zellers stated that of the 83 spaces allotted to exhibitors, over half have been sold. The convention will be self-sustaining, no contributions being solicited.

Two new superintendents in the Kalamazoo Valley were introduced: Roy Barton of the Michigan Paper Company, Plainwell, and W. F. Wolfe of the Mac-Sim-Bar Paper Company, Otsego; also Dwight Stocker, president and general manager of the Michigan Paper Company, all of whom responded with short talks. Dan Stacy of the American Box Board Company, Grand Rapids, and chairman of the registration and exhibit committee, gave a short talk.

Twelve Questions Are Discussed

Twelve questions submitted anonymously to the Secretary Normal Cowie, were taken up and discussed by the members present, after which adjournment until April 23rd, the next meeting date, was declared by the chairman. Among those present were:

G. W. Cragie, national field secretary; Roy Barton, Michigan Paper Company; Clem Sisson, Mac-Sim-Bar Paper Company; James Wise, Kalamazoo Paper Company; Arnold Weller, Sutherland Paper Company; G. H. Renstrop, Westinghouse Company; Dwight Stocker, Michigan Paper Company; A. W. Macvie, Parsons Whitmore Company; R. W. Holden, Stowe Woodward Company; M. F. Flotow, French Paper Company; Archie Webb, Bryant Paper Company; H. M. Faber, Sherwin-Williams Company; H. M. Eastman, Paper Makers Chemical Corporation; A. L. Sherwood, Sutherland Paper Company; F. L. Zellers, French Paper Company; Dan Stacy, American Box Board Company; W. F. Snyder, American Cyanamid Corporation; W. F. Wolfe, Mac-Sim-Bar Paper Company; H. M. Annis, Allied Paper Company; H. E. Stratton, PAPER TRADE JOURNAL; S. R. Atkinson, Executive Convention Secretary; Willard Barnhart, American Box Board Company; J. N. Black, American Box Board Company; Everett Nicholas, Mac-Sim-Bar Paper Company; Mike Redmond, Kalamazoo Paper Company; Otto Fischer, Bryant Paper Company; N. J. Cowie, Hawthorne Paper Company; H. E. Stafford, Hawthorne Paper Company; C. "Baldy" Smith, Kalamazoo; P. W. Bartholomew, Paper Makers Chemical Corporation; A. D. Hayes, Michigan Paper Company; Robert Stewart, Kalamazoo Vegetable Parchment Company; E. G. Milham, Watervliet Paper Company; W. L. Gilman, Brown Company; P. Butemass, Sherwin-Williams Company; C. A. Wettlaufer, Chromium Corporation; L. L. Griffith, Heller and Merz; S. E. Fitzgerald, Paper Makers Chemical Corporation; W. S. Taylor, American Cyanamid Corporation; A. G. Rosnes, Diamond Fibre Company.

Boston Paper Industry Notes

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., March 30, 1936—Serious concern is felt for Walter Firby, a salesman for Knight, Allen & Clark, Inc., whose territory is Maine and New Hampshire. Mr. Firby was in Laconia, N. H., at the time of the flood. No letters have been received from him since March 12, and he did not appear at the office last Saturday. Mr. Firby who is a very efficient salesman, has been with the company about six years. His residence is Lynnfield, Mass.

Philip R. Allen, president of Bird & Son, Inc., East Walpole, Mass., and director of the Boston and Maine Railroad and the Federal Reserve Bank, with Mrs. Allen, left Boston March 22, on the Italian liner Vulcania for Greece, where he will attend sessions of the American School of Classical Studies at Athens. They were accompanied by Mr. Allen's sister, Mrs. John L. Keedy.

Albert T. Hicks, of Daniel M. Hicks, Inc., large dealers in paper stock and pulp, New York City, called on the Boston trade last week.

The Wrapping Paper Division of the New England Paper Merchants Association is to have a meeting today at the Boston Chamber of Commerce.

On the whole, in view of conditions, the paper stock market was fair. With many paper mills closed on account of the flood, business has not been normal, with some grades tending to decline, but with recovery, values are expected to rise. In old papers, the supply of mixed papers and old newspapers is exceeding the demand, so that prices have fallen off. Mixed papers declined to .22½ @ .25 from .25 @ .32½ and old newspapers to .27½ @ .32½ from .32½ @ .35. Print manila eased off to .47½ @ .50 from .50 @ .55. Other grades of old papers were steady. Bagging was generally less active, with foreign manila rope declining to 2.25 @ 2.35 from 2.30 @ 2.40, the same figures applying to domestic manila rope. New and old domestic rags held their own, with quotations unchanged. In foreign rags, dark cotton declined to 1.75 @ 1.90 from 1.85 @ 2.00.

Twine consumers are largely playing a waiting game, to see if prices will go lower.

Obituary

Charles S. Lockwood

Charles S. Lockwood, who worked along with John Wesley Hyatt on the invention of the Hyatt Roller Bearing, died in Newark, March 20, in his 86th year. As an active member of the Hyatt experimental laboratory staff almost up to the time of his passing, Mr. Lockwood's career covered 62 years of service in the employ of John Wesley Hyatt and the companies Mr. Hyatt founded. More than 44 of these years were devoted to the Hyatt Roller Bearing Company, since its incorporation in 1892.

At a "60 years of service" testimonial dinner tendered to him by his Hyatt associates in December, 1934, it was recorded that in 1874, when a lad in his twenties, he joined forces with Mr. Hyatt. Just prior to that Mr. Hyatt had invented celluloid, and Mr. Lockwood came to Newark to serve as manufacturing superintendent of the Celluloid Corporation. Later he took over a similar position in another Hyatt enterprise, the Bonsilate Company of Albany, New York, manufacturers of plastics.

In the late 80's he returned to Newark, N. J., and worked with Mr. Hyatt on the sugar cane crushing machinery then occupying Mr. Hyatt's talents. From a bearing problem encountered on this machine was the Hyatt Roller Bearing conceived to overcome the difficulty. It did the job so well that after a few years the sugar machine idea was passed on to other hands, and Mr. Hyatt formed the Hyatt Roller Bearing Company with Mr. Lockwood as Chief Engineer.

It is interesting to note the prolific inventive minds of these two "partners," John Wesley Hyatt and C. S. Lockwood. In the name of Mr. Hyatt, who lived to be 83, there are upwards to 250 patents, and records show Mr. Lockwood to have nearly 100 patents in his name, too.

This venerable "co-founder" of their company will be greatly missed around the Hyatt plant. For not only was he a great inventor but a fine fellow, loved by all as the name of affection "Pop" Lockwood, bestowed on him indicates, for "Pop" he was for years to his Hyatt associates, many of whom worked along with him for several decades, but still juniors to this congenial octogenarian.

John F. Ross

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., March 30, 1936—John F. Ross, aged 59, of Wausau, Wis., a leading figure in the paper and lumber industries, died March 23 in Queens Hospital at Honolulu, Hawaiian Islands. He was ill when embarking with relatives from San Francisco, and passed away from a heart attack following an operation.

Mr. Ross was president of the Brooks and Ross Lumber Company of Schofield, Wis., vice-president of the Mosinee Paper Mills Company, Mosinee, Wis., and of the Tomahawk Kraft Paper Company, Tomahawk, Wis., both of them located adjacent to Wausau, and in which he took active participation.

Other paper mills of which he was a member of the board of directors were the Longview Fibre Company, Longview, Wash. and the Ontonagon Fibre Company, Ontonagon, Mich.

Mr. Ross was associated altogether with more than forty business concerns. He was president also of the Boulder Junction Building Material Company, Boulder Junction, Wis., the Wisconsin Building Material Company, Schofield, Wis., and the C. C. Collins Lumber Company, Rhinelander, Wis. He was treasurer of the Builders' Lumber and Supply Company, Wausau, Wis., and assistant secretary of the Wausau Southern Lumber Company, Laurel, Miss. He was also a director of several large lumber and timber companies in western United States and Canada.

The body was being conveyed back to the United States aboard the steamship *Malola*, scheduled to arrive at Los Angeles, Cal., April 2. Funeral services are to be held at Wausau following its arrival about April 5.

Charles W. Walker

THREE RIVERS, Que., March 30, 1936—Charles W. Walker, for many years general manager of the Canadian mills of the International Paper Company, died last night at his home here. Funeral services will be conducted here tomorrow.

After having been associated with the International Paper Company for a number of years, Mr. Walker was transferred to Corinth, N. Y., twenty years ago to take the position of manager of the Hudson River mill of the company, then the largest plant operated by the International Paper Company. Several years after he was made general manager of several mills of the company in Northern New York, including plants at Corinth, South Glens Falls and Fort Edward.

In 1926, Mr. Walker was transferred here, where he took over the management of the Three Rivers mill. Shortly after, he was named general manager of all Canadian mills of the company. Due to ill health, he was forced to retire as general manager, four years ago, but he was named resident manager of the Three Rivers plant.

Charles H. Monaghan

ROCHESTER, N. Y., March 30, 1936—Charles H. Monaghan, aged 63, vice-president and treasurer of the Great Lakes Paper Corporation, died March 18, in his home, 86 Veness Avenue, following a long illness.

He was born in Port Hope, Ontario, November 12, 1872, and came to Rochester in 1891. During his early years here he was connected with the Clark Paper Company, the Meyers Paper Company and the F. D. Morgan Company. Later, he organized his own business which he merged with the Great Lakes Paper Corporation.

Surviving are his widow, Winifred May Monaghan; a son, Robert Orr Monaghan of Medina, N. Y.; his mother, Elizabeth; a sister, Mabel L., and a brother, William Orr Monaghan of Utica.

Mr. Monaghan was a 32-degree Mason and active in affairs of Corinthian Temple Lodge, where for many years he served as director of music. As a tenor soloist he sang in many churches of Rochester and for some time was choir director of the First Methodist Episcopal Church.

William L. Davis, Jr.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., March 30, 1936—William L. Davis, Jr., who was vice-president of the Dells Paper and Pulp Company of Eau Claire, Wis., until about a year ago, when the mill was purchased by the Sterling Paper Company, died March 26 at Fort Lauderdale, Fla., where he and Mrs. Davis were spending the winter. He dropped dead from a heart attack. He was 50 years old.

Mr. Davis was a son of the late William L. Davis, Sr., who for many years was president of the Dells mill. He is a brother of S. R. Davis, who succeeded his father as president, and who became vice-president of the Sterling company following the sale of the mill. Besides the widow and his brother, the decedent is survived by one son, William, Jr., Eau Claire.

The body was conveyed to Eau Claire, where funeral services were held March 31.

J. L. Fearing Announces I. P. Sales Changes

J. L. Fearing, Vice-President of International Paper Company, has sent the following announcement to the members of his staff:

"It has long been in my mind to effect a rearrangement of our sales personnel whereby I may relinquish many of my arduous duties as sales manager of International Paper Company as well as many of my present duties in International Paper Sales Company, Inc.

"The new set-up to accomplish this is as follows:

"E. L. Crooker is hereby appointed president, International Paper Sales Company, Inc., with R. C. Doane as vice-president and manager.

"F. H. Savage is appointed sales manager, Book and Bond Division of International Paper Company.

"W. C. Shorter is appointed sales manager, Specialties Division of International Paper Company.

"The foregoing plan will give me time for personal contacts of various kinds and time for the consideration of sales policies and progressive planning; and it will give me the comfortable feeling that I am no longer chained to a desk. I have now been in the paper business nearly forty years of which thirty-seven mark my association with the International.

"I shall, of course, continue as vice-president of International Paper Company, and in that capacity will be available to assist those who are now assuming my former direct responsibilities.

"Confident that my friends, upon whose shoulders these responsibilities are now being placed, will carry on, I bespeak for them the same measure of support that you have always given to me."

Government Paper Bids

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 1, 1936—The Government Printing Office has received the following bids for 2,000 sheets of Quaker drab cloth lined cover paper; Whitaker Paper Company, $153.00 per M sheets; Barton, Duer & Koch Paper Company, $156.00; R. P. Andrews Paper Company, $160.50; Reese & Reese, Inc., $153.00; and Dobler & Mudge, $159.50.

Also the following bids were received for 1,000 sheets (115 pounds) of paraffin manila paper; R. P. Andrews Paper Company, at 12 cents and Whitaker Paper Company, 10 cents.

For (1) 6505 pounds of 26 x 40 white coated paper and (2) 733 pounds same; S. D. Warren Paper Company, at 7.64 cents both items; Stanford Paper Company, 7.64 cents both items; R. P. Andrews Paper Company at 7.1 cents and 8.15 cents; and Barton, Duer & Koch Paper Company, 8.25 cents and 8.75 cents.

Fiscal Bond Portfolio

The Rising Paper Company, Housatonic, Mass., is sending out copies of its new Fiscal Bond Portfolio.

This portfolio demonstrates nine different ways in which Fiscal Bond can be used—not only for letterheads and forms but for reports and envelope stuffers as well.

This portfolio demonstrates Fiscal Bond printed by letterpress, offset lithography and die-stamping. A small reference swatch shows all of the items in the line, while complete line data regarding Fiscal Bond paper and envelopes is given in a handy table on the back cover. This is the sixth in the series of Fiscal Bond portfolios.

Copies of this portfolio may be secured from stocking agents, or, while they last, on request to the Rising Paper Company.

Division of Cellulose Chemistry to Meet

The American Chemical Society will meet at Kansas City, Mo., April 13 to 17, 1936. The following papers will be presented at the meeting of Cellulose Chemistry Wednesday morning and afternoon, April 15:

1. C. O. Seborg, F. A. Simmonds, and P. K. Baird. The Sorption of Water Vapor by Paper-Making Materials. II. The Effects of Physical and Chemical Processing.
2. Elwin E. Harris. The Effect of Mild Heat Treatments on Wood Carbohydrates.
3. G. L. Clark and A. F. Smith. A Critical Experimental Study of Chitin and Its Structural Relationships with Cellulose.
4. Ernest Anderson. Starch and Polyuronides from Lemon Wood.
5. Paul R. Eastwood. Bleachability Determination and Its Relation to Sulfite Cooking.
6. F. R. Olson, E. B. Fred, and E. C. Sherrard. The Effect of Lignin on the Decomposition of Cellulose by Thermophilic Bacteria.
7. A. W. Schorger and M. J. Shoemaker. The Hydroxyalkyl Ethers of Cellulose.
8. Ellis I. Fulmer. The Fermentative Utilization of Cellulosic Materials, Especially the Pentosans.
9. W. O. Kenyon and H. LeB. Gray. The Alkaline Decomposition of Cellulose Nitrate. I. Quantitative Studies.
10. A. J. Bailey. The Chemical Nature of the Middle Lamella.
11. B. L. Browning and T. Andrew Kauppi. Further Study of the Noll Method for the Determination of Lignin.

Middlesex Tube Co. Starts at Augusta

AUGUSTA, Me., March 31, 1936—The Middlesex Paper Tube Company of Maine, Augusta's newest industry, Morris Kaplan, manager, is now in operation on the second floor of the former Crossett Shoe Factory, corner of Bowman and Williams streets. With a crew of ten already at work, half of the full time crew, Mr. Kaplan stated that he expected to expand as the business demands.

Most of the fiber used in the Augusta plant is obtained from the Great Northern Paper Company in Millinocket and is received here in board of jumbo rolls. The product is utilized by the textile industry.

Mr. Kaplan said that while the company is open for business from any part of the country, special endeavor is being made to get Maine business first.

When the plant is running full capacity the daily production in paper tubes will call for the use of nine tons of material, Mr. Kaplan said.

The Middlesex Paper Tube Company of Maine has been incorporated in this State with Samuel Porton of Lowell, Mass., president; Max Kaplan, vice-president; Morris Kaplan, treasurer, and Mrs. Samuel Porton, clerk. The Middlesex Paper Tube Company, the parent organization, also has factories in Lowell, Mass., and Trenton, N. J.

Eagle Paper Mills Formed at Troy

[FROM OUR REGULAR CORRESPONDENT]

TROY, N. Y., March 31, 1936—A new concern to be known as the Eagle Mills Paper and Tablet Manufacturing Company, has filed incorporation articles with the Secretary of State for the purpose of conducting a general paper manufacturing business. The company has a capital stock of 100 shares with no par value. The incorporators are William A. Adams and Walter M. Weisberg, of New York City, and Ethel F. Bader, of Brooklyn Offices of the concern are to be located in Troy.

EARLY REPORTS OF FLOOD DAMAGE EXAGGERATED

(Continued from page 11)

of the quantity of ice which passed over the Holyoke dam from 8 o'clock until 9:30 can be obtained when it is realized that it took an hour and a half to discharge the tremendous mass of ice over the crest of the dam which is 1020 ft. in length.

While every precaution had been taken to prevent property damage through the use of sandbags and crews of men on each side of the river, it was found that the breaking of the jam did not affect the quantity of water which had been flowing past Holyoke during Sunday afternoon. In fact, the maximum effect of the release of the large quantity of ice and the water behind it was a rise of about 2 inches in the pond level above the dam.

The noise caused by the breaking of the ice as it fell over the dam was tremendous and could have been heard for long distances up to 9:30 in the evening. After that time, although watchmen were maintained throughout the night, river conditions reverted to ordinary flood conditions with about 9½ ft. flowing over the crest.

An examination on the ground at Mount Tom Junction on Monday, March 16, indicated some ice still piled along the banks of the river, but the entire flow of the Connecticut was within its original channel.

Floods of various magnitudes over the Holyoke dam are common but so far as can be learned, no ice jam has ever before occurred in this section of the Connecticut River. Its occurrence this year can be explained by the long period of severe cold weather during the months of January and February which preserved intact a heavy ice sheet over the river below Mt. Tom Junction.

This ice sheet broke up Friday afternoon and had the great mass of ice from the north reached Mt. Tom Junction only twelve hours later, there would have been no ice jam and flood conditions at Northampton would not have been serious.

Holyoke Situation Improves

The Chemical Paper Manufacturing Company, Holyoke, Mass., suffered a considerable loss and was unable to operate last week. It is reported that it will probably be another week or ten days before the concern is able to resume operations.

The Linden Division of the American Writing Paper Company, Inc., was the first Holyoke plant to open after the shutdown of paper mills; Friday the Nonotuck and George C. Gill Divisions opened. Most of the mills will be operating probably by the end of the week.

The Hampden Glazed Paper Company was one of the fortunate mills on the river bank. With flood all about and entering the basements of mills this company had a dry cellar, all through the flood. A concrete wall to protect the mill building in time of flood years ago served its purpose well. Sandbags were also used as a bulwark against the waters.

The Millers Falls Paper Company, Millers Falls, Mass., suffered a damage estimated at over $100,000.

At the mill of the Haverhill Boxboards, Inc., Haverhill, Mass., water came up to the basement. The plant was idle all last week, but expected to start up March 30.

At the plant of A. F. French & Co., paper box manufacturers, Howe and Davidson streets, Lowell, Mass., at the junction of the Concord and Merrimack Rivers, water came into the second story of the concern, doing much damage. Some of the stock was removed before it was damaged.

Charles T. Crocker, president and treasurer of Crocker, Burbank & Co., Association, is a member of a committee of five appointed by Mayor Robert E. Greenwood to survey the Nashua River flood damage and to make recommendations as to the most feasible plan to follow to repair and reconstruct.

From Richmond, Va., comes word that damage to the Albemarle Paper Company was estimated at between $2,000 and $3,000 by H. Watkins Ellerson, president.

The Standard Paper Company suffered a loss of $35,000 to its plant machinery and supplies, Howard Donald, secretary-treasurer, said.

The Cauthorne Paper Company estimated its loss at $10,000 or more, according to Ross A. Cauthorne, president.

Miami Valley Escapes

The Miami Valley's escape from serious flood losses this Spring was no mere accident, paper manufacturers who suffered tremendous losses in the 1913 catastrophe conceded, as the vast detention dams built at an expense of more than $30,000,000 afforded complete protection.

While some of the mill men and members of various branches of the paper trade in the Ohio Valley were facing heavy handicaps from suspensions and actual monetary losses from encroaching waters, the Miami Valley was singularly free from flood danger. Just 23 years ago this month, in 1913, the Miami Valley suffered its greatest disaster, the losses having aggregated nearly $100,000,000 while the loss of life was great.

Not a paper mill or paper establishment of any kind in any of the Miami Valley's principal centers, such as Dayton, Middletown, Hamilton, and many villages, escaped the onrush of waters. The entire central section of Dayton was flooded to the second floors of homes and business houses and merchandising stocks were swept out to the river.

Under the guidance of the late John H. Patterson, head of the National Cash Register Company, whose plant was not affected, the city met its problems and a preliminary flood fund of $1,000,000 was subscribed within a week. Immediately followed a flood prevention survey and the enactment of a law providing for the establishment of the Miami Conservancy District, embracing the construction of a series of dams north and south of Dayton to take care of the surplus waters of the Great Miami, Stillwater and Mad Rivers.

The cost, more than thirty millions, was assessed against property owners of the district and the mill centers are still paying for the improvement. But it was the best investment they ever made, for previous to this Spring there were two or three other occasions when the rainfall has been sufficient to cause floods under the old conditions.

In the Quebec area, conditions at Windsor Mills had returned to normal. The Canada Paper Company, obliged to close its lower mill last week when part of the plant was flooded with eight feet of water, was again operating at full capacity.

To Build Sulphate Mill in Finland

According to a cablegram from Helsinki, Finland, dated March 31, certain industrial concerns in the Kymi River Valley are planning the erection of a great new Sulphate Cellulose mill at the mouth of the Kymi River, near the city of Kotka, on the southern coast of Finland. The new mill will be capable of an annual output of about 100,000 tons.

Caslon Nationally Advertises To Raise Merchant's Unit of Sale

In the January issues of national magazines, the Munising Paper Company, manufacturers of Caslon papers, begins a new advertising program to focus the attention of printing-buyers all over the country on the advantages of using watermarked bond papers in place of unwatermarked bonds.

First advertisements appeared in the January 18 issue of *Time*, the *Weekly-News Magazine*, the January 16 issue of *Business Week*, and January issues of *Printer's Ink Monthly, Postage and the Mailbag, American Business and System* and *The Executive Purchaser*. The campaign will run all year.

In discussing this new promotional program, Norman V. Ventriss, sales promotion manager of the Munising Paper Company, states: "Of course, the great volume of printing on sulphite bonds is done on No. 3 or 4 unwatermarked papers, in spite of the fact that much of it should really be put on watermarked bonds like Caslon Bond. This tendency to buy on a price basis keeps the unit of sale low for the merchant and at the same time places the printer in a precarious position—for he may easily lose an order on difference in paper cost alone, to a competitor who based his quotation on even cheaper unwatermarked paper. Such unfair competition cannot of course occur when all quotations are made on a watermarked bond, eliminating all chance for substitution.

"In order to correct this condition to an appreciable extent, the Munising Paper Company has embarked on a broad program of educational advertising. These advertisements reach nearly a million printing-buyers and each message points out to this vast readership that the difference in cost, using watermarked Caslon Bond, is so slight that it is poor judgment to depend on a cheaper, unwatermarked paper, incur the risks of substitution, and place the printer in what might be an unfair competitive position.

"Obviously, we do not expect to reverse present buying habits over-night, or, in fact, to accomplish this change in any great percentage of cases, but we do know that every printer and paper merchant in America will endorse this effort in principle and that with the substantial program we are carrying on, the net result will be a substantial increase in dollars-and-cents volume for paper merchants. Naturally, our campaign at the same time will make the quality of the new, improved Caslon Bond, Caslon Ledger and Caslon Mimeograph Bond well known to printing buyers nationally."

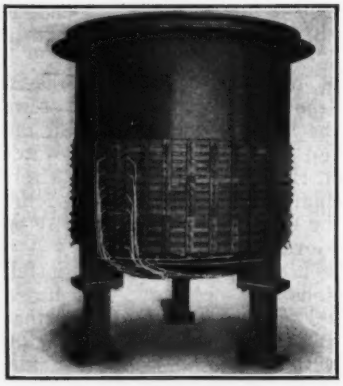
Sample books and helpful portfolios concerned with the planning and efficient use of printed forms are offered in the Caslon national advertisement; and the unique Caslon Bond letterhead box is also featured in some cases. Already hundreds of coupon requests have been received from printing buyers for these portfolios and further information about Caslon papers, indicating the interest aroused nationally by this campaign to increase the volume of business for Caslon distributors.

Advance in Kraft Liner Board Price

Southern Kraft Corporation, wholly owned subsidiary of the International Paper Company, announces that it has today, April 1, advanced the price of its kraft liner board to $60 a ton, an increase of approximately $5.00 a ton, or 10 per cent, over the previous price. The corporation has a production of kraft liner board of about 250,000 tons a year.

Electrically Heated Process Kettle

The Patterson Foundry and Machine Company of East Liverpool, Ohio, has placed on the market a new line of Electrically Heated Process Kettles, which are ideal for chemical process work, also for oil treating and for the manufacture of synthetics.



These kettles can be supplied in stainless steel, aluminum, plain steel and other materials. They are equipped with Patterson Unipower Drives and with stirrers of any type. They are supplied with automatic control and are the safest of all process kettles. These kettles are built in 100, 250, 500 and 1000 gallons capacity regularly, but can be supplied in special sizes as well.

The Patterson Company, in addition to electrically heated vessels, builds direct fired and steam heated kettles of all kinds, in fabricated type and in cast iron and special alloys also.

Electro Lift Twin Hook Monorail Hoist

A new Twin Hook Monorail Electric Hoist is announced by Electro Lift, Inc., 30 Church street, New York City. This hoist is built in capacities of from one-quarter to three-tons and is used wherever long or bulky loads are handled. Such loads, lifted from two points, are carried smoothly, rapidly and without twisting. This is especially necessary for carrying buckets of coal, ashes or sand in foundries, for dipping tanks and for handling rubber, paper, pipes or bar stock in warehouses.

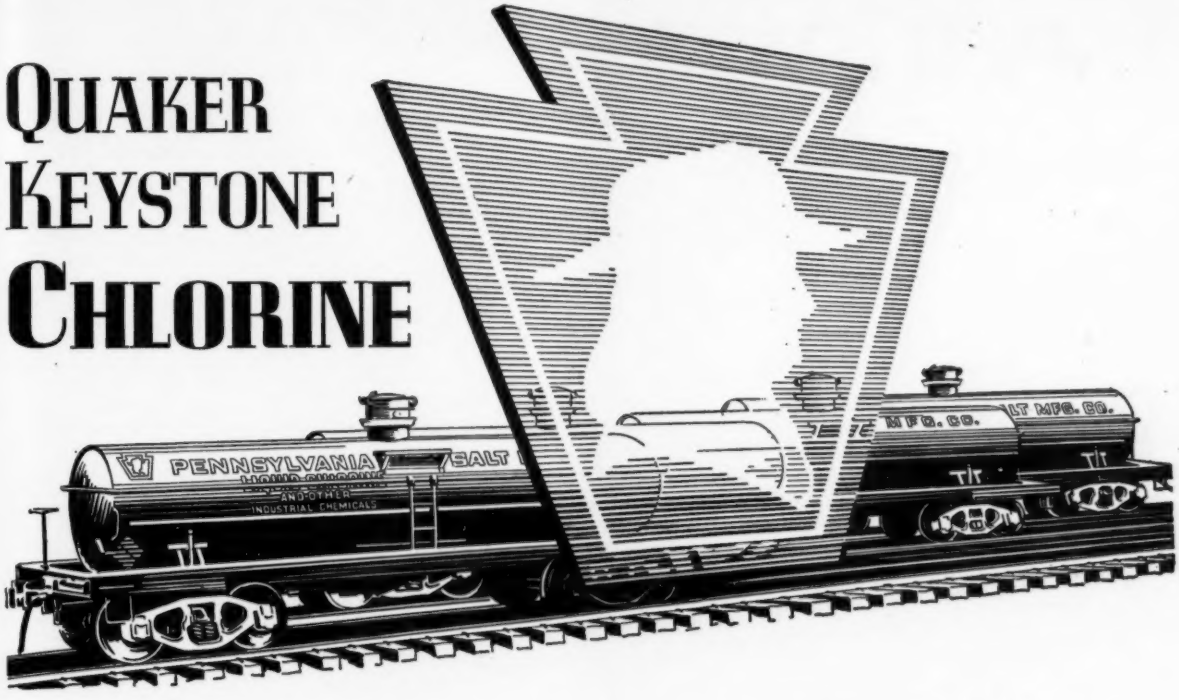
The hoist cables are carried on two drums spaced to suit requirements, operating from a single shaft from the worm geared hoist unit and all carried on a compact and rigid welded steel frame. The worm drive runs on Timken tapered roller bearings, fully enclosed within the gear case and operates in a bath of oil. This provides the simplest possible drive and one that is very quiet in operation. The motor has ball bearings and is directly attached to the hoist frame making a compact machine and giving very close headroom.

The control may be either rope type operated by pulling pendant cords or push button type operated by pushing buttons of a push button station. The push button control allows perfect control of the load by jogging within a fraction of an inch.

Operates Without Interruption

While Holyoke and nearby towns in Massachusetts suffered severely from the flood, the plant of B. F. Perkins & Son, Inc., manufacturers of rolls, and textile and paper finishing machinery, was able to continue operations without interruption during the high water. Manufacturing facilities were not in the least impaired by the flood. The plant, which is relatively new, was built on well-drained land above the general level which floods invade. General Manager A. C. Lade, reports that shipments are being made as usual.

QUAKER KEYSTONE CHLORINE



The First Chlorine in America to be Shipped in Tank Cars was Shipped by the Pennsylvania Salt Manufacturing Co.

Quaker Keystone Brand Chlorine is the result of years of experience and rigid manufacturing control. No greater care could be taken in the manufacture of a dependable chlorine . . . always uniform in quality.

Special care is taken to assure prompt and efficient delivery. Quick deliveries of Quaker Keystone Chlorine to all parts of the country are made possible by the convenient location of our plants and stocks.

Quaker Keystone Chlorine is shipped in all standard types of containers—single-unit tank cars of 16 and 30 tons each and multi-unit cars consisting of 15 one-ton containers. Also small cylinders of 100 and 150 pounds capacity.

Dependability in every phase of this product, from its manufacture to delivery to you, has earned for Quaker Keystone Chlorine the prominent place in the paper industry it has held for years.

Other Chemicals for the Paper Industry

CAUSTIC SODA
SODIUM ALUMINATE
PENCHLOR
Super-test Calcium Hypochlorite
PENCHLOR ACID-PROOF CEMENT
ALUM
ANHYDROUS AMMONIA
BLEACHING POWDER
Standard Strength
CARBON TETRA-CHLORIDE

Est. 1850

PENNSYLVANIA SALT MFG. CO.

EXECUTIVE OFFICES, WIDENER BLDG., PHILADELPHIA, PA.
Branch Sales Offices: New York – Chicago – St. Louis – Pittsburgh – Tacoma – Wyandotte

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FUTURE MEETINGS

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Summer International Meeting in Canada, August 3 to 7, Montreal, Quebec, The Saguenay. Details may be obtained from the secretary, R. G. Macdonald, 122 East 42nd street, New York.

NEW ENGLAND SECTION, Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION, Technical Association of the Pulp and Paper Industry—fourth Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION, Technical Association of the Pulp and Paper Industry—second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION, Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park-American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS' ASSOCIATION, Annual convention, Grand Rapids, Mich., June 24-26, 1936.

AFTER THE FLOODS

The PAPER TRADE JOURNAL extends its deep sympathy to the numerous pulp and paper mills that were damaged in the recent floods. Spring freshets and floods caused by the sudden transition of a severe winter into early spring have not uncommonly in the past greatly inconvenienced and in some instances greatly damaged the mills, but probably not within the memory of anyone actively engaged in the industry today has the inconvenience and the damage wrought by the uncontrolled waters been as widespread as during the past several weeks.

The flood area extended from Quebec through the eastern half of the United States where the pulp and paper mills are most thickly located, with the damage most severe on the whole in the New England Section. While the damage to some of the mills has been serious, early reports, fortunately, were considerably exaggerated. It will, however, be some time yet before entirely normal conditions are restored and in the meantime the industry will be operating at reduced capacity.

There, naturally, has been considerable speculation as to just what consequences will result from this interruption to the smooth running of the industry. Some idea of the far-reaching factors involved may be gained from a press dispatch from Montreal which says that "flood conditions in regions of the Province of Quebec are likely to have a highly adverse effect on the wood supply of a number of leading newsprint companies in this province, it is said among paper men here. The break-up has apparently come three weeks earlier than usual and with roads badly damaged by the floods, there is, according to some observers, a possibility that an important part of the cut will not be brought to the mills. This may portend a shortage of wood next year, it is stated."

Some authorities judge from the obviously bullish factors that higher prices for paper are inevitable, but in general, men well versed in market conditions and influences are not willing to share in these predictions at this time, although they agree that they are not unreasonable. It is more commonly agreed, however, that spot prices may show the influence of the floods if the scarcity in any line becomes acute.

But the mills themselves, naturally, are not showing any great concern about market conditions or prospects just now, but are more interested in getting back to normal at the earliest possible moment. There is abundant evidence that they are going about this work with the same determination that has marked their actions in the past when confronted with unexpected and serious problems of this nature and it is already certain that the damages wrought by the floods will be repaired much sooner than seemed likely when the reports of the disaster first began to come in.

SWEDISH PULP INDUSTRY IMPROVES

The market situation is regarded generally by Swedish pulp and paper manufacturers and exporters as appreciably better at this time than a year ago. The statistical position is regarded as comparatively satisfactory. The demand toward the end of the year showed a strengthening trend, and this despite such unfavorable factors as the African war, import restrictions, exchange control in various countries, and similar handicaps to trade. A somewhat firmer tendency has also manifested itself in sulphite pulp prices in recent weeks. The Swedish-American trade agreement, binding unbleached sulphite and bleached and unbleached sulphate on the American free list and the subsequent Canadian-American agreement whereby, through most-favored-nation treatment Sweden is accorded continued free entry for bleached sulphite and mechanical pulp was received with satisfaction. A notable step taken in the groundwood field was the agreement between producers in northern countries whereby beginning with 1936 exports will be by quota. Measures toward eliminating surplus production were also taken, so that the new year opens without the presence of this disturbing factor. Groundwood prices recently have shown some improvement.

Well over half of the estimated output of sulphite pulp for 1936 had been sold by the end of 1935 and stocks on hand were estimated at only about half of those a year previous. Exports during the last quarter of the year were considerably above those of the corresponding three months in 1935. With exports unusually high,

prices have remained at figures which have been generally unremunerative. A slightly firmer tendency was observable at the end of the year, but there is no reason to suppose that any very marked increase will take place for some time. Over-production in the large producing countries is ascribed as the reason for the continued low prices ruling in this class. An additional factor in Sweden has been the sale of pulp by paper manufacturers who produce their own pulp.

Swedish sulphate manufacturers had disposed of about 80 per cent of their 1936 output by the end of 1935. The demand for this class has been active and prices firm. The reports of projected new mills in nearby countries have been received with disfavor. Here, too, exports during the last quarter of 1935 were substantially above those for the corresponding period in 1934.

Very little was done in ground wood until the latter half of November. About two-thirds of the 1936 production had been sold by the end of the year. The agreement between the northern makers of ground wood providing export quotas for 1936 and also the measures taken for the disposal of existing surplus production are steadying factors for the coming period.

From the standpoint of volume, the year just finished must be regarded as a good one for the paper manufacturing industry. Prices remained low, however, and manufacturers report an absence of reasonable profits. Hope for the future is considered to lie in greater cooperation between producers with a view to achieving higher price levels. Agreements in certain branches of the industry toward the end of the year have already given signs of yielding good results.

February Newsprint Statistics

Production of news print in Canada during February, 1936, amounted to 221,569 tons and shipments to 206,076 tons, according to the News Print Service Bureau. Production in the United States was 72,252 tons and shipments 70,495 tons, making a total United States and Canadian news print production of 293,821 tons and shipments of 276,571 tons. During February, 24,047 tons of news print were made in Newfoundland and 171 tons in Mexico, so that the total North American production for the month amounted to 318,039 tons. Total production in February, 1935 was 277,231 tons.

The Canadian mills produced 67,260 tons more in the first two months of 1936 than in the first two months of 1935, which was an increase of seventeen and six-tenths per cent. The output in the United States was 711 tons or five-tenths of one per cent more than for the first two months of 1935, in Newfoundland 2,221 tons or four and two-tenths per cent less, and in Mexico 3,467 tons less, making a net increase of 62,283 tons, or ten and six-tenths per cent.

Stocks of news print paper at Canadian mills were reported at 92,082 tons at the end of February and at United States mills 16,032 tons, making a combined total of 108,114 tons compared with 90,864 tons on January 31, 1936. Considerable tonnage was accumulated at points from which water shipments will be made upon the opening of navigation.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association:

COMPARATIVE MONTHLY SUMMARIES

Month	1936	1935	1934
January	76.1%	65.8%	.....
February	78.0%	70.0%	.....
March	.....	70.5%	.....
April	.....	70.0%	.....
May	.....	69.4%	.....
June	.....	72.3%	.....
July (b)	.....	67.8%	.....
August	.....	70.9%	.....
September (c)	.....	75.0%	59.4%
October	.....	75.6%	64.7%
November	.....	75.3%	61.7%
December (a)	.....	74.3%	62.1%
YEAR	.....	71.2%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1936		CORRESPONDING WEEKS, 1935	
*March 7	79.6%	March 9	69.6%
*March 14	78.6%	March 16	69.8%
*March 21	71.3%	March 23	70.8%

The following statistics show the number of mills reporting by ratio groups:

Ratio Limits	Number of Mills Reporting, Current Weeks: March 7, 1936	March 14, 1936	March 21, 1936
0% to 50%	72	80	94
51% to 100%	259	245	151
Total Mills Reporting	331	325	245

* Subject to revision until all reports are received.
These data exclude (a)—Christmas Day, (b)—Fourth of July, (c)—Labor Day.

PAPERBOARD OPERATING RATIOS

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours," were as follows:

1934	1935	1935	1935	1936
Sept. ... 62%	Jan. .. 61%	May .. 61%	Sept. . 69%	Jan. .. 61%
Oct. ... 63%	Feb. .. 67%	June . 65%	Oct. .. 76%	
Nov. ... 56%	Mar. .. 67%	July . 59%	Nov. . 70%	
Dec. (a) 53%	Apr. .. 61%	Aug. . 65%	Dec. . 60%	

Week ending Feb. 8, 1936—66%
Week ending Feb. 15, 1936—66%
Week ending Feb. 22, 1936—66%
Week ending Feb. 29, 1936—65%
Week ending March 7, 1936—68%
Week ending March 14, 1936—67%
Week ending March 21, 1936—65%

Otto L. Brauns Goes To Algonquin

OGDENSBURG, N. Y., March 31, 1936—Otto L. Brauns, for the past several years a member of the staff of Abitibi Power and Paper Company, Ltd., of Canada, will on April 1 take the position as superintendent of the sulphite mill of the Algonquin Paper Corporation. He is a graduate of the Royal Institute of Technology at Stockholm, Sweden, and his first connections were with the department of industrial chemistry at McGill University, Montreal. In 1929, he joined the staff of the Abitibi concern as research engineer at Iroquois Falls, Ont., where he remained until 1930 when he was moved to Sturgeon Falls.

In 1931 he was appointed assistant chief chemist at the Saulte Ste. Marie mill and for the past six months was in direct charge during the absence of the superintendent. He was recently awarded a gold medal for a publication on a research in pitch. He plans to bring his family to this city.

Whitaker Paper Co. Buys Warehouse

ATLANTA, Ga., March 30, 1936—Purchase of a warehouse at 641-643 Whitehall street by the Whitaker Paper Company from the estate of Mrs. Bertha M. Swift for a price exceeding $35,000 was reported last week.

The purchasers will move into the building about October 1, 1937, when the present lease expires. The building has facilities for the loading of four trucks and will be used as a wholesale paper warehouse. Railroad facilities are also available.

"Now there's an OPAQUE sheet"

Salesmen are encountering many comments such as this when offering the new improved lines—more opaque, whiter and brighter papers that arouse enthusiasm among paper dealers, printers and consumers.

Because the desired degree of these qualities can be obtained by CRYPTONE and ALBALITH Zinc Sulphide Pigments, which are available in a range of strengths to meet a variety of requirements, the use of these pigments is increasing.

The trade is looking for these qualities. . . . Our Technical Service Department is ready to cooperate with you on any phase of this development.

New Jersey Zinc

THE NEW JERSEY ZINC COMPANY 160 FRONT STREET, NEW YORK

ZINC SULPHIDE PIGMENTS IN PAPER

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

New England TAPPI Hears Harry Williamson

The New England Section of the Technical Association of the Pulp and Paper Industry met at the Hotel Nonotuck, Holyoke, Mass., Friday, March 27th, 1936. The usual dinner preceded the business meeting which opened at 8:00 P. M. Roger C. Griffin, of Arthur D. Little, Inc., presided as chairman.

The speaker of the evening was Harry Williamson, consulting engineer for the Robert-Gair Companies, who gave a very interesting talk on "Stock Preparation" interspersed with his inimitable humor.

Remarks by Mr. Williamson

Mr. Williamson stated that stock preparation goes back twenty centuries to the Chinese, who, with mulberry leaves and water and mortar and pestle, prepared stock for the first sheet of paper. The changes in stock preparation have been entirely mechanical; fundamentally we have not moved. The fundamentals of beating stock will not and cannot change. Mechanical means of doing it have changed and will change. If we will only recognize the fact that the art of papermaking is no longer satisfactory, the science of papermaking must come into its own. Science must be the leader and not the follower.

The preparation of stock, if we only stop to visualize it, could be clearly defined as the point in the process of manufacturing where the many inherent variables of the stock are re-assessed.

In connection with water which is the carrying medium until we have formed the individual fibers into a homogeneous mass, Mr. Williamson mentioned that it is necessary to keep in mind the distinction between water of contact and water of hydration. The water of hydration cannot be removed by capillary attraction and can only be evaporated by heat on the driers. Water of contact can be removed by suction and by nip pressure as long as there is enough fluid water to be removed.

With the exception of certain very high grades of paper we overdevelop and overprepare the stock as far as its physical characteristics are concerned. We do this to meet the mechanical necessities of the paper machine whether fourdrinier or cylinder.

He also stated that the outstanding fault of the fourdrinier is the high velocity of the stock going to the wire and the tendency of the fibers to arrange themselves in the machine direction. The curse of every cylinder machine is the very short forming time on the cylinder where formation takes place in a very short time by the sudden rush of water due to the difference between the inside and outside levels.

Mr. Williamson discussed the relative value of different types of beating engines, also the position of jordans in the field of stock preparation.

An interesting discussion followed Mr. Williamson's talk.

Next Meeting at Worcester

The next meeting will be held at the Hotel Bancroft, Worcester, Mass., April 17 with Harold Fair, general manager of the Alliance Paper Company of St. Catharines, Ontario, and Charles Champion of the R. T. Vanderbilt Company of New York City who will talk on Opaque Pigments.

Those Who Attended

W. P. Richardson, Arthur D. Little, Inc., Cambridge, Mass.; E. H. Norton, C. H. Norton Company, No. Westchester, Conn.; A. H. Gilmour, C. H. Norton Company, No. Westchester, Conn.; H. W. Richter, H. K. Burrill, and Ralph J. Dalton, George O. Jenkins Company, Bridgewater, Mass.; Arthur B. Green, Needham, Mass.; Charles F. Gurnham, Ludlow Manufacturing and Sales Company, Ludlow, Mass.; P. W. Ayers and W. E. Powers, Smith Paper Company, Lee, Mass.; John McGarry, Crane & Co., Dalton, Mass.; Jacob Edge, Downington Manufacturing Company, Downington, Pa.

G. E. Williamson, Strathmore Paper Company, West Springfield, Mass.; J. S. Brown and R. L. Driscoll, Smith Paper Company, Lee, Mass.; Archibald Sharkey, Crane & Co., Dalton, Mass.; R. H. Doughty, Fitchburg Paper Company, Fitchburg, Mass.; R. H. Kimball and Philip Goldstein, George O. Jenkins Company, Bridgewater, Mass.; T. E. Boyne and E. A. Richardson, Smith Paper Company, Lee, Mass.; Walter Aiken, The Clark Aiken Company, Lee, Mass.; R. A. Packard, Smith Paper Company, Lee, Mass.; S. G. Stapley, Chemical Paper Company, Holyoke, Mass.

Fred Lovenberg, Mathieson Alkali Works, Providence, R. I.; J. J. Powers, Smith Paper Company, Lee, Mass.; S. D. Hellberg, American Writing Paper Company, Holyoke, Mass.; Cornelius Stapley, Chemical Paper Company, Holyoke, Mass.; Frank H. Leonard, Marble-Nye Company, Providence, R. I.; William Glendon and L. B. Tucker, Crane & Co., Dalton, Mass.; Parker B. Holden, C. Frederick Young and Robert D. Thompson, Rising Paper Company, Housatonic, Mass.; Charles B. Muzzy and C. H. Vickery, E. D. Jones & Sons Co., Pittsfield, Mass.; Joe Sullivan, Rising Paper Company, Housatonic, Mass.

P. S. Bolton, Clinton Sales Company, Boston, Mass.; Joseph H. Burgen, American Writing Paper Company,

Holyoke, Mass.; R. J. Proctor and Albert Stettner, Fitchburg Paper Company, Fitchburg, Mass.; William J. Burke, General Dyestuff Corporation, Holyoke, Mass.; H. W. Lavallee, Clinton Sales Company, Springfield, Mass.; G. E. Mangsen, Fitchburg Paper Company, Fitchburg, Mass.; Fred W. Schneider, Hampden Color and Chemical Company, Springfield, Mass.; A. L. Perry, Krebs Pigment Company, Boston, Mass.; John T. Leecock and L. M. Yoerg, American Writing Paper Company, Holyoke, Mass.

Harry Williamson and L. K. Burnett, Robert-Gair Companies, New London, Conn.; Lena E. Kelley and Helen U. Kiely, American Writing Paper Company, Holyoke, Mass.; Gordon Booth, Robert-Gair Companies, New London, Conn.; Roger C. Griffin, Arthur D. Little, Inc., Cambridge, Mass.; R. E. Kilty, A. E. Staley Company, Springfield, Mass.; John P. Kennedy, American Writing Paper Company, Holyoke, Mass.

W. L. Foote, B. F. Perkins & Sons Company, Holyoke, Mass.; James Ramage, Franklin Paper Company, Holyoke, Mass.; Norman Kennedy, Penick & Fork Company, New York City; M. J. Baker, Franklin Paper Company, Holyoke, Mass.; Robert M. Swaney, Franklin Paper Company, Holyoke, Mass.; Grant S. Willey, Collins Manufacturing Company, N. Wilbraham, Mass.; Walter Hendrick, Byron Weston Paper Company, Dalton, Mass.; C. L. Reece, Jr., Whiting Paper Company, Holyoke, Mass.; Walter J. Cassidy, American Writing Paper Company, Holyoke, Mass.; James Fitzgerald and Charles Backus, Collins Manufacturing Company, N. Wilbraham, Mass.; Claude Smith and George Carroll, American Writing Paper Company, Holyoke, Mass.; Herman Grasselt, Collins Manufacturing Company, N. Wilbraham, Mass.; L. A. Thompson, Papermakers Chemical Company, Holyoke, Mass.; Leonard Taylor, American Writing Paper Company, Holyoke, Mass.; Charles Davidson, Jr., Whiting Paper Company, Holyoke, Mass.; R. W. Pattison, American Writing Paper Company, Holyoke, Mass.; F. H. Osborne, C. H. Dexter & Sons, Inc., Windsor Locks, Conn.; A. C. Cahoun, Robert-Gair Company, New London, Conn.; G. A. Peterson, Rice, Barton & Fales, Worcester, Mass.

April TAPPI Meetings

Lake States Section—April 14, Conway Hotel, Appleton, Wis.

Kalamazoo Valley Section—April 16, Park-American Hotel, Kalamazoo, Mich. Speakers: William R. Maull, vice-president of TAPPI, and of Dill & Collins, Inc., Philadelphia, Pa.; John P. Hagenauer of the American Paper and Pulp Association, New York, on "Paper Machine Operating Variables"; and R. G. Macdonald, Secretary of TAPPI.

Ohio Section—April 16, Anthony Wayne Hotel, Hamilton, Ohio. Same speakers as at Kalamazoo meeting.

New England Section—April 17, Hotel Bancroft, Worcester, Mass. Speakers: A. E. H. Fair, general manager of the Alliance Paper Mills, Merritton, Ont. and C. H. Champion of R. T. Vanderbilt Company, New York. Subject: "Opaque Filler."

Delaware Valley Section—April 24, Engineers Club, Philadelphia, Pa. Speakers: Harry Weston, *Paper Industry*, Chicago, Ill. Subject: "New Machinery Developments."

New York State TAPPI Group—May 8-9, at the Hotel Leonard, St. Catherines, Ont. Joint meeting with the New York-Canadian Division of the Superintendents Association.

Mason-Neilan Regulator Co. Joins TAPPI

The Mason Regulator Company of Boston, Mass., established in 1882, is well-known by the paper industry engineers for its power plant and general process regulators.

In 1931 this company acquired the Neilan Company of Los Angeles, Cal., and this acquisition supplemented the Mason line with instrument control.

The company now known as the Mason-Neilan Regulator Company, with main office and factory at Boston, Mass., is now in a position to offer complete instrumentation and regulation to the paper industry. The company has branch offices and service available in all the larger cities throughout the United States, with representation abroad.

The Pulp and Paper Mill Sales Engineering Department has been formed for the purpose of better serving the control needs of the industry. This department is under the direction of A. H. Stanton, who has spent the past six years in actual contact with the problems of pulp and paper industry.

In addition to equipment for the handling of temperature, pressure and flow control and a line of instruments for recording or indicating these elements this company has developed specialized drying control systems, stock level systems and sulphite digester cooking systems.

Mr. Stanton will represent the Mason-Neilan Company in the Technical Association of the Pulp and Paper Industry.

British Columbia Mill Notes

Telephone communication with Woodfibre, B. C., site of the B. C. Pulp & Paper Company's plant on Howe Sound, has now been made possible by the B. C. Telephone Company, Vancouver. The new service is provided by means of the telephone company's existing lines along the North Shore and up Howe Sound to Britannia Beach, where connection is made with a Dominion Government circuit to Woodfibre.

The Westminster Paper Company plant at New Westminster, B. C., was visited recently by members of the Canadian Chemical Association. Arrangements were in the hands of C. O. B. Cave.

C. E. Carpenter Resigns

C. E. Carpenter, who has been managing two small corrugated box companies in New England and New York has recently discontinued this work and has made no definite plans for the immediate future other than some consulting work.

Mr. Carpenter was formerly general sales manager of the Eastern Division and was manager of the Cincinnati Division of the Container Corporation of America, and managed several paper mills for Arthur D. Little, Inc. Mr. Carpenter may be reached at his permanent address at Fort Miller, N. Y.

Change in TAPPI Standard T 4 m

M. A. Youtz, Chairman of the Fibrous Materials Testing Committee of the Technical Association of the Pulp and Paper Industry has requested that individuals having copies of the TAPPI Standards binder make the following correction in Standard T 4 m (One Per Cent Caustic Soda Solubility of Wood). In the third paragraph the porosity is indicated 25-5/7. This should now be 3.

Delaware Valley TAPPI Discusses Starch

The Delaware Valley Section of the Technical Association of the Pulp and Paper Industry met at the Engineers Club, Philadelphia, Pa., on Friday evening, March 27. H. P. Cannon of the Container Corporation of America presided as chairman.

Nominating Committee Reports

Edward J. Albert reported for the nominating committee (C. W. Rivise, C. A. Shubert, F. W. Brainerd and Mr. Albert) and presented the following slate to be voted on at the April meeting: Chairman—H. C. Schwalbe, Dill & Collins, Inc.; Vice-chairman—James d'A. Clark, Scott Paper Company; Secretary-Treasurer—C. M. Connor, Glassine Paper Company; Executive Committee—A. J. Luettgen, P. H. Glatfelter Company; and H. P. Cannon.

Lectures on Starch

Two unusually good papers were presented and since they will soon be published in full in the PAPER TRADE JOURNAL it will not be necessary to describe them here.

C. C. Kesler, Chief of Research for Penick & Ford Sales Company, Cedar Rapids, Iowa, talked on "Starch and Its Various Applications in the Paper Industry."

Jerome Strasser of the Stein Hall Manufacturing Company, Chicago, Illinois, discussed "New Applications and Developments in the Use of Starch in Paper."

Those present included: P. V. Barrow, Dill & Collins, Inc., Philadelphia; Fred Streicher, L. A. Gilbertson, same company; E. J. Albert, Thwing Albert Instrument Company, Philadelphia; V. Jacobsen, National Aniline and Chemical Company, Philadelphia; George Oechsle, Roy Hill and C. A. Shubert of Dill & Collins, Inc.; E. I. Stokes, Stein, Hall & Co.; Philadelphia; J. R. Atwater, Dill & Collins, Inc.; A. R. Boyd, F. C. Huyck & Sons, Albany, N. Y.; W. E. Brown, Container Corporation of America, Manayunk, Pa.; C. W. Hoffman, Riegel Paper Corporation, Milford, N. J.; J. H. Gillies, Scott Paper Company, Chester, Pa.; L. W. Crouse, Penick & Ford, Ltd., New York; Donald Demmy, Penick & Ford, Ltd., Philadelphia; C. E. Peterson, Riegel Paper Corporation, Milford, N. J.; H. L. Becher, Agasote Millboard Company, Trenton, N. J.; D. M. Sutherland Jr., Trenton, N. J.; J. H. Fritz National Oil Products Company, Harrison, N. J.; J. J. Lofferty, Stein, Hall & Co., Philadelphia; J. Roslund, Moore & White Company, Philadelphia; W. C. Jay, Sanitary Products Corporation, Philadelphia; H. M. Saffer, Stein, Hall & Co., Philadelphia; W. R. Willets, Titanium Pigment Company, Brooklyn, N. Y.; E. A. Shallcross, Process & Development Engineers, Philadelphia; W. O. Snelling, Trojan Powder Company, Allentown, Pa.; H. F. Hoffman, General Dyestuff Corporation, Philadelphia; F. W. Brainerd, Scott Paper Company, Chester; L. M. Sutherland, Sloane-Blabon Corporation, Trenton, N. J.; J. C. Harper Jr., West Jersey Paper Manufacturing Company, Camden, N. J.; D. M. Shapleigh, Bulkley Dunton & Co., New York; P. M. Loddengaard, same company; L. M. Booth, Booth Chemical Company, Elizabeth, N. J.; G. B. Martin, General Dyestuff Corporation, Philadelphia; J. C. Dieffenderfer, Paper Makers Chemical Corporation, Easton, Pa.; J. F. Carroll, Reading Paper Company, Reading, Pa.; C. G. Albert, Edgar Brothers Company, Metuchen, N. J.; P. Van Wyck, Hercules Experimental Station, Wilmington, Del.; M. Craig Maxwell, McDowell Paper Mills, Manayunk, Pa.; C. W. Rivise, patent attorney, Philadelphia; L. E. Smith, Downingtown Manufacturing Company, Downingtown, Pa.; O. C. Cordes, Downingtown Manufacturing Company, Downingtown, Pa.; C. W. Richards, Krebs Pigment and Color Corporation, Wilmington, Del.; R. W. Ball, same company; J. H. Young, Du Pont Experimental Station, Wilmington, Del.; L. L. Larson, Du Pont Company, Wilmington, Del.; R. G. Macdonald, Secretary of TAPPI, New York; H. P. Cannon, Container Corporation of America, Manayunk, Pa.; Miss R. M. Cobb, Lowe Paper Company, Ridgefield, N. J.; E. N. Wennberg, Continental Diamond Fibre Company, Bridgeport, Pa.; H. C. Schwalbe, Dill & Collins, Inc., Philadelphia; C. H. Sanitchfield, Hercules Powder Company, Wilmington; C. C. Stewart, C. C. Stewart Paper Company, Philadelphia; R. E. Aiman, Norristown, Pa.; L. C. Copeland, N. J. Zinc Company, Palmerton, Pa.; J. P. Strasser, Stein, Hall Manufacturing Company, Chicago, Ill.; C. C. Kesler, Penick & Ford Sales Company, Cedar Rapids, Iowa.

TAPPI Patents Committee Busy

The Patents Committee of the Technical Association of the Pulp and Paper Industry is at present working on the following subjects:

1. Recent patents decisions of interest to workers in the pulp and paper industry.
2. The influences that retard or accelerate invention.
3. Patent agreements.
4. Amicable settlement of patent disputes.
5. Keeping invention and research records.
6. Advisability of obtaining foreign patents.
7. Recent changes in Patent Office practice and procedure.
8. Shop rights.
9. Synopsis of important patent decisions since 1930 relating to the pulp and paper industry.
10. International Convention for the Protection of Industrial Property.

C. W. Rivise of Caesar & Rivise, patent attorney, Philadelphia, is chairman of the TAPPI Patents Committee.

TAPPI Notes

R. G. Quinn, formerly of the Research Department of the International Paper Company, Glens Falls, N. Y., is now with Johns-Manville at Manville, N. J.

A. J. Baily, formerly of the Forestry School at the University of Washington, is now a member of the staff of the Institute of Paper Chemistry, Appleton, Wis.

D. W. Newell, formerly with the Container Corporation of America, Chicago, is now with the U. S. Gypsum Company, Oakfield, N. Y.

R. G. Vaeth, recently of the New York State College of Forestry, is now with Gair Thames Containers, New London, Conn.

Carl Magnus, formerly general superintendent of the Standard Paper Manufacturing Company, Richmond, Va., is now with the Waterfalls Paper Company, Mechanic Falls, Me.

Lyman M. Smith, formerly manager of the Cherry River Paper Company, Richwood, W. Va., is now with the Inland Empire Paper Company, Millwood, Wash.

Computation of Impact and Contact Inches In Beaters and Refiners*

By G. Lamont Bidwell, Jr.[1] and D. Manson Sutherland, Jr.[2]

Abstract

(1) Terms and definition for impact and contact inches are suggested. (2) Formulae for the computation of these factors are also suggested. (3) Correlation of beater and refiner design with stuff properties, capacities and power consumption are badly needed by equipment manufacturers and paper mill operators in order to improve upon present practice.

The Stuff Preparation Committee has been endeavoring, for several years, to collect data on the various types of beaters and refiners that are being used throughout the industry so that definite information can be readily available to members. We are especially interested in the design of the tackle and its relation to the stuff properties developed and the amount of power consumed.

We have divided our work into two parts, namely;

(1) The collection of data, from equipment manufacturers, on the details of design from which are computed the impact and contact inches per minute.

(2) The collection of commercial data, from paper mills operating the machines upon which we have secured the details of design, in the hope that we can correlate these results with the impact and contact inches.

This paper represents a preliminary report on Part 1.

In order to facilitate the preparation of similar data by all equipment manufacturers, a questionnaire was prepared and sent to 37 members and manufacturers of Beaters and Refiners as follows:

Name of Machine..... Cost .....
Manufactured by..... Shipping Weight.....
Floor Room and Head Room Required .....

	Beater		Refiner	
	Roll	Bed plate	Plug	Shell
1. Length of bars	.....	.....	.....	.....
2. Width of bars	.....	.....	.....	.....
3. No. of bars	.....	.....	Small end / Middle / Large end	.....
4. Note any special design or arrangement	.....	.....	.....	.....
5. Width of spaces	.....	.....	Small end / Middle / Large end	.....
6. Depth of spaces	.....	.....	Small end / Middle / Large end	.....
7. No. of spaces	.....	.....	Small end / Middle / Large end	.....
8. Diameter	.....	.....	Small end / Middle / Large end	.....
9. Rated speed—r.p.m.	.....	.....	.....	.....
10. Surface speed	.....	.....	Small end / Middle / Large end	.....
11. Number of lineal inches bars	.....	.....	.....	.....
12. Area of edge of bars	.....	.....	.....	.....
13. Angle of shear	.....	.....	.....	.....

	Beater	Refiner
14. Inch cuts per revolution	.....	.....
15. Inch cuts per minute	.....	.....
16. Bar areas in contact per revolution	.....	.....
17. Bar areas in contact per minute	.....	.....
18. Materials of construction	.....	.....

	Beater Pounds per Each Per cent Consistency	Refiner Pounds per hour
19. Rated capacity	....	.....
20. Size of intake and discharge openings	.....	.....
21. Head developed (refiner only)	.....	.....
22. Range of pulp consistency for efficient operation	.....	.....
23. Size of motor recommended	.....	.....
24. Blue print	.....	.....
25. List of paper companies using machine	.....	.....

A study of the information, which we received in replies from several equipment manufacturers, reveals the fact that there is a definite need for a standard method or formula for computing impact and contact inches. Since it is important to establish procedure in this connection, before advancing further into the correlation of tackle design with fiber development and power consumption, your Committee has prepared formulas and offers the same as a suggested standard.

Basis or Formulae

Practically every beater and refiner has different tackle varying widely in the following factors:

(1) Length of bars
(2) Width of bars
(3) Number of bars
(4) Arrangement of bars
(5) Width of spaces or cells
(6) Depth of spaces or cells
(7) Angle of shear
(8) Speed

Since bed plates in beaters vary a great deal in width and number of bars as well as angle it has been necessary to give particular attention to these factors. Greater difficulties are experienced in the calculations on refiners because the length, number and arrangement of bars introduce special conditions which must be taken into account especially when determining contact inches.

In order to simplify the definitions and terms used, the following is suggested:

TERM—*Impact Inches.*

(Inch cuts and meter cuts)

Definition—Developed length of bars in the stationary and rotating members.

Explanation—The length is computed by following the angle or curvature of the bars and the developed length of the bars in the shortest member is taken, *ie.*, when the overall length of the plug bars is less than the overall length of the shell bars the length of the plug bars is taken.

The cutting action of the bars depends upon the angle and pressure. Even a sharp pair of scissors will not cut fibers unless sufficient pressure is exerted. Since it is not practical to maintain sharp edges on bars it is suggested that impacts on fibrages produce the action on fibers generally called "cutting." Consequently Impact Inches is suggested as being more representative of the actual refining action.

TERM—*Impact Inches Per Minute.*

(Inch cuts per minute and meter cuts per second)

Definition—The number of impact inches developed in a complete revolution of the revolving member times the r.p.m.

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* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 17 to 20 ,1936.

[1] Member TAPPI, Riegel Paper Corporation, Riegelsville, Pa.

[2] Member TAPPI, Consulting Engineer, Broad Street National Bank Bldg., Trenton, N. J.

Explanation—The suggested method of determining impact inches per minute is formulated by determining the developed length of the bars in the shortest member and multiplying by the number of bars in that member by the number of bars in the other member and by the r.p.m.

We then have $L \times N^1 \times N^2 \times$ R.P.M. = impact inches
Where L is developed length in shortest member
N^1 is number of bars in one member
N^2 is number of bars in the other member
R.p.m. is revolutions per minute

TERM—*Contact Inches.*

(Area of edge of bars, beating surface)

Definition—The area of bars in one member contacting the bars in the co-acting member.

Explanation—Assuming that, when a beater roll is not working hard on the bed plate or a jordan plug is not screwed up tightly against the shell, we do not have a "cutting" but more of a rubbing or brushing action on the fibrages or fiber bundles, then it is necessary to take into consideration the area which can be utilized in rubbing or brushing.

It is generally recognized that 3/16 inch bars are "cutting" bars and 3/8-inch bars or wider are rubbing bars. Some manufacturers use the term "cutting" for narrow bars and "hydrating" for wide bars as an explanation of the different refining action of a wide bar as compared with a narrow bar.

TERM—*Contact Inches Per Minute.*

Definition—The number of contact inches developed in a complete revolution of the revolving member times the r.p.m.

Explanation—The total area of the one member is computed by multiplying the number of bars by the width and by the developed length of the bars of the shortest member. We are now working with square inches and consequently cannot multiply by the width of the bars in the other member. It is certain, however, that the width of the bars must be taken into consideration in any formula developed for the computation of contact inches. We, therefore, suggest that, for the other member, a width factor of one be introduced. Since most bars are less than one inch wide the width used will be that proportion of one corresponding to the width of the bar.

For the other member we would then multiply the number of bars by the r.p.m. and by the width factor. We then have for the first member.

$L \times W \times N_1 =$ area
where L = developed length in shortest member
W = width of bars of one member
N_1 = number of bars of same member

For the other member

$N_2 \times$ R.P.M. $\times$ WF
where N_2 = number of bars in other member
R.P.M. = revolutions per minute
WF = width factor

which gives

area $\times N_2 \times$ R.P.M. $\times$ WF = constant inches per minute

Expressed in another way contact inches per minute = impact inches times the width of bars in one member times the width factor of the other member.

We have applied these formulae in determining impact and contact inches in beaters and refiners from data supplied by several equipment manufacturers who have cooperated with the Stuff Preparation Committee. The classification of the machines selected are made by the manufacturers.

Type of Machine	Contact inches per minute	Impact inches per minute
1 (Beater)	20,650,000	2,590,000
2 (Beater)	20,106,240	3,141,600
3 (Jordan)	16,750,400	4,187,600
4 (Jordan)	15,282,000	3,820,500
5 (Jordan)	15,282,000	2,149,030
6 (Jordan)	16,750,400	2,355,525
7 (Jordan)	42,270,720	23,777,280
8 (Attrition mill)	896,000,000	31,600,000
9 (Attrition mill)	3,140,000,000	3,000,000
10 (Attrition mill)	29,120,000	14,300,000

The results given above show a few of the many possible variations in Impact and Contact Inches which can be obtained in Beater and Jordan design. We hope, with the cooperation of the equipment manufacturers to secure a great deal more similar information on other Beaters and Refiners before starting the second part of our program.

This effort on the part of the Stuff Preparation Committee is the beginning of the development of formulae for use in the design of beating and refining equipment of all types as its contribution to the knowledge of the art of Stuff Preparation.

Further Notes On the Kollergang Beating Method for Pulp Evaluation*

By James d'A. Clark[1] and R. S. von Hazmburg[2]

Abstract

Further information and experiments are given regarding the Clark kollergang. The identity of action of eight different instruments is shown and also a very satisfactory agreement in results on a test pulp examined by six different laboratories. The effect of temperature on sheet-making appears to be more important than was first appreciated. Slight modifications to the method as originally proposed are suggested.

Unbeaten stocks for two bonds, a ledger and a glassine paper were treated by the kollergang and compared to the same stocks actually processed in the mills. A very satisfactory similarity in the beating actions is demonstrated.

Since the presentation of this method before the 1935 TAPPI Annual Meeting *(1)*, fifteen instruments have been built, standardized and distributed. Until it was evident that they were being perfectly made and adjusted, the majority of the first instruments were checked by making one or more test runs on a selected sample of pulp.

Experiment M. Results of Eight Different Kollergangs on the Same Pulp

A quarter bale of an easy beating alpha pulp was se-

* Presented at the annual meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 17 to 20, 1936.

[1] Member TAPPI, Engineering & Technical Manager, Scott Paper Co., Chester, Pa.

[2] Research Director, Scott Paper Co., Chester, Pa.

lected and used for standardizing the instruments according to the procedure suggested.

The experiment was conducted over a period of nine months with results as shown in Table XIV.

As will be seen later, the changes in the results (which are lower during the hot summer weather and become higher again with colder weather), can be ascribed in part to deterioration of the pulp but particularly to the effect of temperature on sheet making, the magnitude of which, unhappily, was not fully appreciated. During these tests the temperature of the water in the laboratory used for sheet-making, gradually rose from 12 deg. C in April to 35 deg. C in July and September, and then fell to 16 deg. C in November and December. It is unfortunate that the actual temperatures of the water used for these experiments were not recorded. Taking into consideration the fact that all the unbeaten tests on the pulp (which were not treated by the kollergang) fluctuate correspondingly, it will be seen that the instruments agree very well indeed amongst themselves, particularly when the results of those tested at the same period of the year are examined. This temperature effect will be noticed also in the next experiment.

Experiment N. Results from Five Different Laboratories on the Same Pulp

250 gram samples of the easy beating alpha pulp were sent to six laboratories in three different countries in October, 1935. A request was made not only for the test results but also for a separate set of the test sheets, which were subsequently tested in the Scott Paper Company's laboratory. This was done to determine separately any differences ascribable to the paper testing procedures. See Table XV.

The figures in italics are those from sheets made in different laboratories but tested in the laboratory of the Scott Paper Company. It will be noted that there are more variations in results attributable to the methods employed for testing the sheets than to the methods employed for the beating and forming of them. The table provides very cogent reasons for the necessity for a revision of the corresponding TAPPI methods for paper testing, which at present is being considered.

The low results obtained by Laboratory B were held to be in error, but as will be noticed, a request for a repeat gave very good check tests. On inquiry, it was learned that there the temperature of the water for sheet-making is controlled at 25 deg. C all the year round. Comparing their results with those obtained by the Scott Paper Company in Table XIV, during August, when the temperatures were comparable, it will be seen that the results are almost identical. This again gives a marked indication that temperature plays an important part in sheet-making. Note that all the unbeaten tests, as those of Laboratory B, in Table XV, fluctuate in the same manner as the tests of the beaten stock, indicating again that this cannot be ascribed to differences caused by the kollergang or its method of use.

In view of the sensitivity of the kollergang method in its ability to distinguish between pulps of various qualities, and making allowance for the effect of temperature, it will be noted that the differences among the several laboratories are not significant, especially when corrected for differences in the paper testing procedures.

Experiment O. Effect of Temperature on Sheet-Making

In view of the effect of temperature already discussed in the last two experiments, it was decided to investigate this phenomenon further. It has been held *(2)* that temperature has no great effect on sheet-making, although it is known that temperature has an adverse effect on the development of strength during beating, and Harrison has indicated *(3)* that temperature may have an appreciable effect on the making of sheets from beaten stock. It has been somewhat difficult to get practical evidence of this in the past, as usually experiments are not conducted with unchanged methods over sufficiently long periods to be sure of constancy, and oft'times discrepancies in test results could be suitably attributed to the aging or deterioration of the pulp sample. Unfortunately the acuteness of this problem arose at too late a date to have been thoroughly investigated for this paper, but results in Table XVI indicate its significance.

Sixty-six grams (dry weight) of the easy beating alpha pulp were soaked for four hours, disintegrated in 2,200 cc. of water (3 per cent) for 75,000 revolutions in the standard disintegrator during which time the temperature rose from 0 to 10 deg. C. The stock was then made into sheets,

TABLE XIV—RESULTS WITH EIGHT KOLLERGANGS

Kollergang No.	1935 Date	Specific Gravity at various R.p.g. 0	5	10	20	Burst Factor at various R.p.g. 0	5	10	20	Breaking Length at various R.p.g. 0	5	10	20	Tear Factor at various R.p.g. 0	5	10	20
3	April	.53	.62	.68	.71	18.5	23.5	25.7	25.1	2180	3550	4260	4860	214	164	119	81
4	April	.54	.63	.67	.72	17.5	24.0	26.1	28.1	2110	3620	4390	5050	189	156	116	84
7	April	.53	.62	.66	.71	18.7	24.4	26.0	25.8	2120	3500	4100	4500	202	157	114	91
5	May	.54	.62	.66	.71	18.5	21.3	23.6	24.6	2080	3560	4230	4860	182	179	128	88
6	May	.55	.63	.66	.71	17.2	24.4	24.7	25.8	2070	3570	4290	4820	191	156	104	78
10	June	.51	.60	.64	.70	16.3	23.0	24.8	25.3	2000	3230	3990	4830	183	160	118	86
8	July	.51	.58	.62	.68	15.3	21.7	24.8	25.2	1730	3000	3840	4340	187	167	132	84
8	August	.51	.60	.62	.67	14.6	18.7	21.2	22.1	1720	3000	3590	4020	188	156	124	79
5	September	.51	.59	.63	.69	14.8	18.9	20.4	22.8	1750	2840	3530	4180	190	160	137	99
8	September	.51	.59	.64	.69	14.7	19.4	21.5	22.4	1720	2830	3590	4340	179	156	130	90
2	October	.51	.58	.64	.71	15.3	19.7	21.3	22.9	1890	3010	3640	4250	186	172	132	92
13	November	.51	.57	.63	.68	16.4	22.2	25.5	23.5	1980	3360	3950	4200	202	170	129	93
8	November	.51	.60	.65	.72	16.8	22.2	24.3	24.7	1930	3250	4075	4650	192	167	123	87
2	December	.52	.59	.65	.72	16.7	20.5	23.6	24.5	2040	3320	3820	4670	182	172	130	86

TABLE XV.—COOPERATIVE KOLLERGANG TESTS

	Specific Gravity at various R.p.g. 0	5	10	20	40	Burst Factor at various R.p.g. 0	5	10	20	40	Breaking Length at various R.p.g. 0	5	10	20	40	Tear Factor at various R.p.g. 0	5	10	20	40
Scott Paper Company	.51	.60	.65	.72	.76	16.8	22.2	24.3	24.7	22.1	1930	3250	4075	4650	4950	192	167	123	87	60
Scott Paper Company—Repeat	*.51*	*.60*	*.66*	*.70*	*.77*	*17.2*	*21.3*	*23.6*	*26.0*	*22.9*	*1950*	*3200*	*4050*	*4410*	*4710*	*181*	*164*	*119*	*79*	*62*
Laboratory A (Canada)	.54	.61	.66	.70	.75	20.1†	25.6†	29.2†	29.4†	25.6†	2060	3530	4130	5030	5020	172	168	122	92	63
*Laboratory A and S. P. Co.**	*.51*	*.60*	*.63*	*.68*	*.72*	*16.6*	*21.5*	*24.4*	*25.0*	*23.7*	*1800*	*3350*	*4125*	*4650*	*5125*	*171*	*164*	*119*	*80*	*58*
Laboratory B (U. S. A.)	.52	.60	.75	.71	.76	13.1	17.6	19.3	20.6	17.7	....	....	....	....	....	...	...	...	...	...
*Laboratory B and S. P. Co.**	*.50*	*.58*	*.61*	*.66*	*.73*	*15.0*	*19.5*	*21.4*	*22.7*	*18.7*	*1710*	*2840*	*3450*	*4175*	*4200*	*161*	*160*	*130*	*86*	*57*
*Repeat and S. P. Co.**	*.49*	*.57*	*.61*	*.67*	*.74*	*15.6*	*20.3*	*22.2*	*23.2*	*19.7*	*1620*	*2830*	*3490*	*4050*	*4180*	...	*160*	*133*	*84*	*57*
*Laboratory C (U. S. A.) and S. P. Co.**	*.54*	..	*.65*	*.71*	*.75*	*17.7*	...	*24.8*	*25.0*	*21.9*	*2080*	....	*4300*	*5000*	*5050*	*174*	...	*110*	*78*	*54*
Laboratory D (Finland)	(.55)	.60	.63	.71	.78	(8.8)	21.8	26.0	26.0	18.0	(1595)	3010	4010	4230	3730	(172)	175	121	89	51
*Laboratory D (Finland) and S. P. Co.**	*(57)*	*.62*	*.65*	*.73*	*.78*	*(11.8)*	*21.2*	*24.9*	*24.1*	*20.5*	*(1500)*	*3300*	*4080*	*4780*	*4830*	*(150)*	*158*	*113*	*76*	*55*
Laboratory E (Finland)	.50	.58	.64	.71	.76	13.8	20.5	23.2	23.4	17.9	1640	3260	3940	4830	4290	165	175	127	84	51

* Sheets made by Cooperating Laboratory and tested by Scott Paper Co. Figures in parenthesis are "Initial"—not "Unbeaten" tests.
† Laboratory A found after this test that their gauge was reading high.

using water at a temperature of 10 deg. C, pressed in a cold atmosphere (10 deg. C) then dried, conditioned and tested under standard conditions. This was repeated in a very warm (30 deg. C) room using 35 deg. C water throughout with the following results.

TABLE XVI.—EFFECT OF TEMPERATURE ON DISINTEGRATION AND SHEET-MAKING

Temperature	B.W.*	S.G.*	B.F.*	B.L.*	T.F.*
0 to 10 deg. C.	59.8	.52	15.0	1810	151
Repeat	57.7	.53	15.4	1850	154
35 deg. C.	59.4	.50	13.7	1620	165
Repeat	61.2	.51	13.3	1610	161
14 deg. C.	57.5	.50	14.6	1780	180
45 to 50 deg. C.	60.3	.49	11.2	1400	160

Note: In the two last experiments, which were done before the others, the temperature of the air (and the pressing) was the same, 25 deg. C.

*The abbreviations used in this paper are as follows:

R.p.g.—Revolutions of the Kollergang per gram of pulp in its trough during treatment.

B.W.—Basis weight, grams per square meter, TAPPI Standard T 205 m.

S.G.—Apparent specific gravity (water = 1), TAPPI Standard T 205 m.

B.F.—Burst factor, grams per square centimeter by grams per square meter, TAPPI Standard T 205 m.

B.L.—Breaking length, meters, TAPPI Standard T 205 m.

T.F.—Tear factor, 100 × grams per single sheet by grams per square meter, TAPPI Standard T 205 m.

D.T.—Drainage time, seconds, TAPPI Standard T 205 m.

It will be noted that even the results obtained at low temperatures are not as high as the highest on Tables XIV or XV. It is believed that a low temperature during pressing tends to decrease the strength of the sheets because the water is then not so readily removed from the moist sheets and the moisture content of the sheets coming from the press has an important effect on their resulting strength *(4)*. In the other operations, the tendency is to give an increase; consequently not only has the temperature of sheet making to be considered, but also that of the press. There are probably these two opposing factors in the phenomenon which likely are of different respective magnitudes for different pulps. This may explain a tendency in the past to overlook these effects, as in certain experiments sometimes they may nearly compensate for each other.

While work on the effect of temperature is not yet complete, nevertheless, it is felt justifiable to request in the method that the temperature of the water and room be as near the range of 20 to 25 deg. C as practicable.

Experiment P. Comparative Degrees of Beating

When the method was presented, *(1)* it was stated that it was possible, after a careful study and investigation of the effects of the beating and accessory equipment in any mill, to determine approximately the equivalent number of revolutions per gram which is accorded stock in any mill for a given class of paper. It was suggested that the equivalent beating conditions might prove to be 5 revolutions per gram in a news mill, 7 for book, 10 for bond, 20 for ledger and about 80 for glassine. Miss Helen U. Kiely, judging from an examination of some kollergang results on pulps with which she had experience, expressed an opinion that for book, bond and ledger papers the figures quoted above were probably too high. Accordingly the beating curves were drawn for several samples of unbeaten stock (together with broke) for several different papers and compared with the results obtained from test sheets made from the actual mill prepared stocks for these papers, with results shown in Tables XVII to XX.

TABLE XVII.—COMPARATIVE DEGREE OF BEATING FOR "LOFT DRIED BOND"

R.p.g.	0	2½	5	10	20	Mill Beaten & Refined Stock
S.G.	.63	.69	.72	.75	.78	.69
B.F.	28.1	32.6	33.7	35.1	32.6	32.3
B.L.	3970	4770	5470	6090	6250	5100
T.F.	159	119	95	92	71	69
D.T.	5.6	6.3	7.0	7.5	7.9	6.6

It will be noticed that excepting the tear, a beating amount of about 3 R.p.g. would be equivalent to the mill prepared stock for this quality of "Loft Dried Bond."

TABLE XVIII.—COMPARATIVE DEGREE OF BEATING FOR "MACHINE DRIED BOND"

R.p.g.	0	2½	5	10	20	Mill Beaten and Refined
S.G.	.62	.67	.70	.73	.76	.77
B.F.	29.3	34.1	37.3	36.2	32.9	36.6
B.L.	3870	4730	5450	5630	5980	5750
T.F.	160	107	88	77	70	66
D.T.	5.0	6.0	6.5	6.9	7.4	6.8

It will be seen that about 10 R.p.g. corresponds to the mill prepared stock.

TABLE XIX.—COMPARATIVE DEGREE OF BEATING FOR "MACHINE DRIED LEDGER"

R.p.g.	0	2½	5	10	20	Mill Beaten and Refined
S.G.	.62	.66	.68	.72	.76	.76
B.F.	29.1	34.6	39.1	41.3	40.2	32.1
B.L.	4320	5080	5930	6980	6330	5200
T.F.	158	114	99	92	78	75
D.T.	4.9	5.9	6.5	7.2	8.3	6.5

Except for the tear, 3 R.p.g. corresponds closely to the mill prepared stock.

TABLE XX.—COMPARATIVE DEGREE OF BEATING FOR GLASSINE PAPER

R.p.g.	0	20	40	80	160	Mill Beaten	Mill Beaten and Refined
S.G.	.77	.82	.87	.93	.94	.84	.92
B.F.	60.3	57.7	54.5	47.7	36.4	44.0	49.5
B.L.	8300	8500	7800	6860	6590	7770	7720
T.F.	84	71	66	61	48	55	49
D.T.	13.1	14.7	26	63	120	200	610

Except for the drainage time, 80 R.p.g. corresponds fairly well with the mill prepared stock. The higher drainage time of the mill stock may be attributed to the addition of fines from white water.

From the four preceding tables it will be noticed that it is important to compare the conditions in one's own mill to the kollergang results to determine the equivalent treatment, as it so largely depends upon local conditions. It is now believed that the closest number of R.p.g. corresponding to conditions in a newsprint and book paper mill is nearer 2 than the 5 and 7 R.p.g. respectively, as judged previously. It is also evident that the action of the kollergang is even more rapid than was believed.

A perusal of the general results in these tables, indicates that the kind of beating action given pulps by the kollergang and method, is quite comparable to the beating action by commercial beating equipment in the paper mill. This of course, is a factor very much in favor of the apparatus for laboratory use.

The tear factor of mill prepared stock, in general, will be lower than the kollerganged stock, as the latter has not been cut to the same degree. Again it is emphasized that cutting is a function of whatever beating equipment is used in the mill, and this varies. The ability of a pulp to "stand up to the roll" is easily seen from examination of the kollergang results, without having to cut the fibers to the same degree as in the mill.

Modifications to Original Suggestions

As a result of the past years' experience, the following modifications are suggested to the method as originally proposed *(1)*.

CALIBRATION.

Insert the following as the third paragraph—"To check the contact between the rims of the runners and the track, smear a thin film of artists' Prussian blue on a section of the rims of each runner, rotate the framework through three quarters of a turn and observe that the prints made by all three runners are uniform and in the center of the track."

NOTE: Except when the edges of the rims of the runners appear to be burred over, there is no need to use the scraper. Soon after a new instrument is used, the working surfaces of the runners become roughened with tiny indentations caused by grit, etc., in the pulp. This is a normal condition of these surfaces and this change has been shown experimentally to have no appreciable effect on the results.

PROCEDURE.

Add: "During the procedure for processing and sheet-making, the temperature of the stock, the water used and the blotters on the press shall be between 20 and 25 deg. C.

TABLE XXI.—EXPERIMENTAL RESULTS ON SOME BLEACHED SULPHITE PULPS

	R.p.g.	S.G.	B.F.	B.L.	T.F.
A. Weak Specialty	0	.54	16.0	1980	175
	1	.55	16.2	2250	160
	2	.58	17.8	2850	120
	4	.66	17.9	3200	80
	8	.71	18.1	3750	60
B. Good Bond	0	.57	22.5	3050	140
	1	.62	23.7	3320	120
	2	.64	26.2	3900	95
	4	.68	25.1	4550	75
	8	.74	23.1	4680	50
D. Utility	0	.61	19.0	2820	125
	1	.62	20.2	3200	105
	2	.67	21.7	3750	85
	4	.72	23.6	4400	70
	8	.76	23.0	4350	55
F. Mitscherlich	0	.60	26.0	3500	160
	1	.62	30.0	4250	140
	2	.67	35.0	5000	105
	4	.74	37.4	5750	90
	8	.79	35.0	5850	70
W. West Coast "Book Grade"	0	.51	15.5	2040	145
	1	.53	17.2	2550	155
	2	.57	19.0	3300	170
	4	.63	22.0	4050	135
	8	.69	21.5	4300	85

AMOUNTS OF BEATING.

Delete the first paragraph and add: "The standard amounts of beating for pulps shall be 0, 1, 2, 4, 8, 16, 32, 64 and 128 revolutions in the kollergang per gram of pulp tested. While for some purposes it is sufficient to test the qualities of a pulp after a single amount of beating (8 revolutions per gram is suggested), it is recommended that tests be made at least 3 and preferably 4 amounts of beating, according to one of the following series:

(1) For pulps easily beaten.....	0,	1,	2,	4,	8	R.p.g.
(2) For normal pulps	0,	2,	4,	8,	16	R.p.g.
(3) For pulps difficult to beat.....	0,	4,	8,	16,	32	R.p.g.
(4) For pulps very difficult to beat..	0,	8,	16,	32,	64	R.p.g.
(5) For special purposes	0,	16,	32,	64,	128	R.p.g.

DISINTEGRATION.

First paragraph, Lines 4 and 5—Height of propellor in disintegrator, delete "2.25 inches and 1.25 inches respectively, and add 2 inches and 1 inch.'"

PROCESSING.

In the tables substitute the above series and recalculate

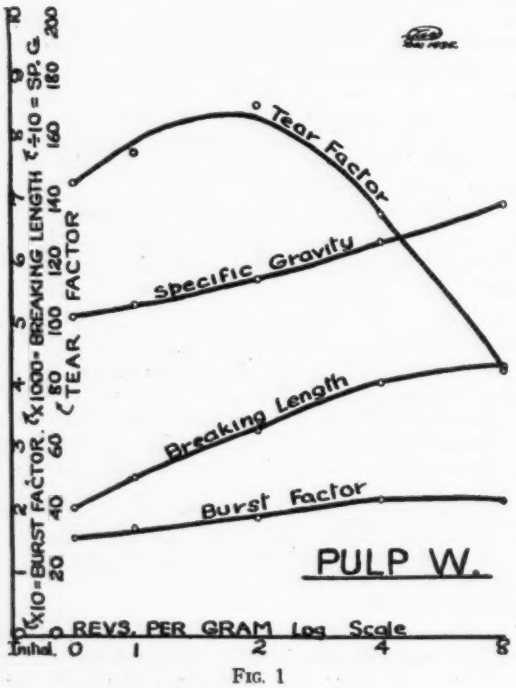

FIG. 1

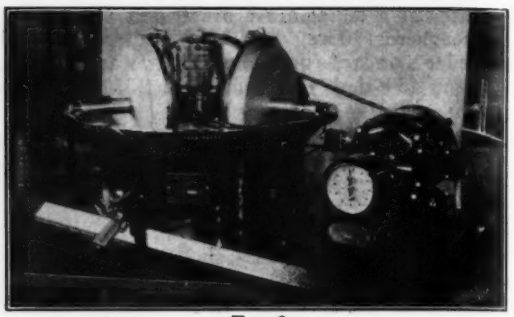

FIG. 2

the corresponding revolutions and times of treatment.

CLEARING.

Delete "Dilute each 200-cc. sample of stock to 1 liter and disintegrate for 30,000 revolutions (10 minutes)" and add—"Dilute each 200-cc sample of stock to 1.5 liters and disintegrate for 15,000 revolutions (5 minutes). The stock for the unbeaten test is not further disintegrated."

Results With Modified Method

In Table XXI are given the results of pulps—A, a soft weak specialty; B, a good bond; D, a utility or second quality bond pulp and F, Dexter bleached mitscherlich pulps, which were circulated by the TAPPI Fibrous Raw Materials Committee in 1933, and pulp W, Weyerhaeuser Book grade bleached sulphite. These tests are slightly different from those previously given, as they were obtained with the standard 80 kg. kollergang with high speed electric stirrers. The previous results were obtained with the first (90 kg.) kollergang, which also was equipped with slow, mechanically driven, stirrers. The speed of the stirrers has an appreciable effect on results for the lesser degrees of beating and should be held within the limits specified in the method.

Note the bulk, weakness and slight strength development of A, together with the rapid compacting of the sheet with beating, as is indicated by the rate of increase of the S.G.

Note the high strength with a relatively low S.G., and the better initial tear of B compared with D.

Note the very high strength and tear resistance and the relatively low S.G. at initial stages of F.

Note the very low S.G. with corresponding strength and exceptionally high tear of W. The latter increases with beating as would be expected from its combined S.G. and the other strength characteristics.

The interpretation of these curves requires a little practice, especially as they are likely somewhat unfamiliar to those accustomed to pebble mill or small laboratory beater tests.

It is recommended that for interpretation, the curves be plotted semi-logarithmetically with the "initial" values at the origin and the 1, 2, 4, 8, 16, 32, 64 and 128 R.p.g. periods at equi-distant intervals, the 0 or "Unbeaten" values being midway between the point on the abscissa corresponding to 1 R.p.g. on the origin. Fig. 1 showing the curves for pulp W is an example. Fig. 2 is a photograph of the Kollergang.

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Pulp and Paper Manufacturing Developments*

Preparation of Non-Fibrous Raw Materials in 1935[1]

1. WATER:

The great importance of efficient water treatment for pulp and paper processes has been appreciated in recent years more than formerly. Wenzl *(1)* points out that water high in manganese and iron will discolor pulp in the bleaching operation, and cause yellowing of paper. Hard water will produce precipitates on the fibers which give bleaching difficulties and less efficient washing. Well known is the influence of hard water in sizing. The temperature of the water influences the speed of washing and the beating of pulp. Not much is known about the influence of organic substances in the water, but serious sizing difficulties have been observed and it may influence the beating too.

For a proper treatment of the raw water more accurate data than at present are necessary about the volume of the rainfalls and other volume fluctuations during the year, and the amounts and nature of waste waters entering the water supply.

The clarification of the water with coagulants needs more study. The efficiency of aluminum sulphate can frequently be improved by the addition of acid and floc formation at a low pH. Soft, highly colored water is best coagulated at pH 4.0. Hard alkaline water has been coagulated even above pH 7.0, but most waters have an optimum at pH 5.5-6.5. Powell *(2)* reports about successful test, with ferric salts, particularly for waters low in alkalinity. The available pH range is wide, and a bulky and highly absorptive floc is formed. No increased iron content of the filtered water was noted.

The recirculation of settled sludge or the addition of selected clays has been beneficial in several plants. Recently, aluminum sulphate plus activated carbon ("Black alum") has been applied in paper mills for an improved removal of color. Chlorination in addition to the well-known prevention of slime produces more effective filtration and color removal. Sulphurous acid was applied in Tampa for the removal of color due to tannins or other vegetable matter.

The proper mixing of the coagulants with the water in tanks with horizontal or vertical paddles is, of course, most essential. A very economical mixing was accomplished in Cleveland by a design utilizing the hydraulic jump.

The efficiency of the filters can be improved by proper flow control and sufficient washing. It was found that in winter less washing was necessary, apparently due to the higher viscosity of the water. A washing time control depending on the temperature was successful. The regular cleaning of the filter sand with industrial cleaners is recommended.

The corrosion of metal pipes through water was recently discussed in a two-day meeting. *(3)* In paper mills the water is mostly neutralized with hydrated lime, but it was found that other alkalies were better, producing much improved sizing.

2. SIZING WITH ROSIN:

A valuable literature review of theory and practice was given by Hochberger. *(4)* During the sizing symposium of TAPPI, February, 1935, the problems in this field were ably discussed in several original papers. *(5)*

The rosin sizes high in free rosin attracted special attention. The Bewoid process made further progress, and is today introduced in 230 plants. Very similar is the method of the Amber Size Company *(6)* which mixes molten rosin with a small amount of formalized casein or gum arabic or colloidal clay, and 0.72 per cent sodium hydroxide (based on the rosin). Manson *(7)* proposes to grind together 85 parts rosin, 15 parts colloidal clay and 2 parts caustic soda.

In the Gillet size process up to 80 per cent free rosin can be produced. Ecke *(8)* reports of successful mill trials and a scientific investigation by Gerngross. Ecke claims that the cooking of rosin with small amounts of soda ash and sodium bicarbonate followed with a second cook with ammonia in a special cooker produces stable and efficient sizes. Wieger *(9)* questions the discrepancy between the patent description and the present process as outlined by Ecke.

The use of the interesting soya bean casein as an adjunct to rosin size is proposed by Dunham. *(10)* The differences between the long fiber fraction and the short-fibered "slime" fraction has been recognized already in the manufacture of special sulphite pulps. The Hofa Company *(11)* found that savings of 30 to 50 per cent size can be accomplished on groundwood if the long fibers are separated and sized, and afterwards the short fiber fraction is added again. Of considerable principal interest is also the process of Papeteries Navarres *(12)* to size the pulp outside of the beater before processing with paraffin emulsions.

A really satisfactory sizing process can, of course, only be established if the sizing effect is understood. R. M. Cobb's pioneering work was already mentioned. *(9)* Kovalevskii *(13)* was apparently successful to create an accurate testing method using benzene and correlating his tests with actual sizing experience.

3. SIZING WITH STARCH:

The proper application of starch was discussed by Obst *(14)* and by a writer in the French paper magazine. *(15)* Reference should be made again to Rowland's important contribution. *(16)*

4. FILLERS:

The retention of fillers was studied by several investigators. Using equal amounts of talc Brecht *(17)* found that cotton retained 40 per cent; unbleached kraft, 60 per cent; unbleached sulphite, 65 per cent; straw, 69 per cent; bleached linen, 73 per cent and white groundwood, 75 per cent. Perekalsky *(18)* observed on the same pulp best retention if colored aluminum silicates were used, next was talc, then clay, calcium carbonate and poorest was gypsum. The retention increased with the basis weight in a parabolic curve and a formula was developed. Steele *(19)* worked out the relation between basis weight and optical properties in an excellent analysis. Similar optical tests were made by Ress. *(20)* Fluorescence measurements proved conclusively that the largest amount of filler is located on the top side of the sheet. Brecht *(17)* found that the Bekk smoothness of uncalendered paper is reduced in proportion to the filler content of the sheet. Blanc

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* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 17-20, 1936.

[1] These reports are made annually by the chairmen of the committees of the Operating Division of the Technical Association of the Pulp and Paper Industry. An effort is made to only point out the more important developments. —Frederic C. Clark, General Chairman, TAPPI Operating Division.

fixe is an exception. With calendering the smoothness is improved with increased filler content. The porosity was reduced most with natural unburned gypsum. No change of porosity was noted when zinc sulphide was used.

Willets *(21)* found that alum up to 3 per cent improves very much the retention and is more important than rosin size which helps. Brecht *(17)* observed the same. Stschegloff *(22)* noticed that alum, caustic soda and silicate increased the retention.

Several papers reviewed again the high refractive index pigments. *(23)*

Calcium sulphite as a filler was proposed by Statham and Haywood. *(24)*

A calcium carbonate producing no sizing difficulties shall be made by introducing carbon dioxide gas into a paper stack containing calcium hydroxide. *(25)* Rafton presents a modification of a mixture of calcium carbonate paraffin emulsion and alum. *(26)*

DYESTUFFS:

The most important contribution was the study by Rose and Schmidt about the mechanism of dyeing paper. *(27)* A review of dyestuff selections for paper was given by Ekholm. *(28)* The tinting blues were further improved in dispersability. The best product up to now is offered in solution instead of powder form. Most progress is probably made with new dyestuff combinations, which in broke handling and white water reuse offer substantially improved paper machine operation.

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Alkaline Pulping and Bleaching Developments During 1935[2]

Again this branch of the industry has progressed along all fronts during the year. The individual items responsible for these improvements however have been, in most cases, no outstanding developments. Improvements were due chiefly to a better understanding of the principles involved in the processes.

However, 1935 saw the development of a new improved unit for recovering the chemicals from black liquor. This was a furnace, invented by George H. Tomlinson of the Howard Smith Paper Company and is a spray type furnace in which the spray impinges upon a wall of the furnace and drops into the smelter below.

The improved Murray-Waern type furnace has been modified now by heating the water for the waste-heat boiler by means of a series of tubes encased by the connector of the smelter unit with the rotary unit. Inventive activity in the recovery of chemical still proceeds at a rapid rate.

The Union Bag and Paper Company broke ground at Savannah, Ga., for a new kraft mill in 1935. The strong undercurrent of discussion of new mills in the South still exists and 1936 will probably see the real start of the expected development in pulp manufacture for this section of the country.

[2] Prepared by Harold R. Murdock, chairman, TAPPI Alkaline Pulping Committee.

Sulphite Developments During 1935[3]

The past year has been one of singular barrenness as concerns new process developments in the Sulphite Industry.

What progress has been made has been primarily concerned with waste liquor recovery. The main activity in this direction has been the development of plans and the proceeding with construction of a mill scale demonstration plant at the Marathon Paper Mills, Rothschild, Wis., employing the Howard Process for liquor disposal. This process operates on the principle of fractional precipitation, lime being the agent used to precipitate a large percentage of the materials in the waste sulphite liquor. Through subsequent filtration and drying this material is recoverable for use as a fuel or as a base for organic by-products such as tanning agents, etc.

Another process for waste liquor is one employing concentration by evaporation which has received the study of P. A. Paulson of Appleton, Wis. In this process it is proposed to employ an evaporating system, the evaporation being carried on at a pressure sufficiently high above atmospheric so that the evaporated vapors may be employed as a heat medium in the cooking process. It is proposed to use this system in connection with a forced circulation and indirect heating method for the cooking phase. The concentrated liquor will be disposed of as a liquid fuel in a waste heat recovery boiler system.

Stuff Preparation Developments in 1935[4]

With the revival of business in 1935 there has been considerable activity in the improvement of old and the development of new stuff preparation equipment.

In beaters the trend seems to be toward higher consistencies and resulting greater capacities with a lower horsepower consumption. The manufacturers of the newer types emphasize tremendous savings in power used for stock circulation. This committee hopes, in the near future, to secure some technical data on some of these latest installations.

Considerable progress has been made in the further development of continuous refining and continuous batch systems.

Paper Manufacturing Developments in 1935[5]

The following patents have come to our attention during the past year:

Wet Felts—German Patent 602,753, by Edward V. Asten, Hauset (Belgium). The object is to secure a weave that will insure freer passage of water.

Slice for Fourdrinier Paper Machines—German Patent 611,585, by Otto Schmidt, Oberleschen, Schlesien. He claims that by this method of discharge a uniform felting of fibres results automatically since a whirling motion is attained.

Screen Plate for Paper Making—Patent 2,015,139—40-

[3] Prepared by W. H. Swanson, chairman, TAPPI Acid Pulping Committee.
[4] Prepared by G. Lamont Bidwell, Jr., chairman, TAPPI Stuff Preparation Committee.
[5] Prepared by Frank C. Ladd, chairman, TAPPI Paper Manufacturing Committee.

41 by Frank Dustan, Fitchburg, Mass. A development of interest is the new Suction device for fourdriniers. This is an endless belt of rubber, driven over two rollers and occupying the space usually held by the suction boxes. Grooves on the outer surface of the rubber run at right angles to the machine direction so that the wire rests on the ridge between the grooves. At bottom of grooves are rows of holes connected with the vacuum pump. (Still in the experimental stage).

The following suggestions of new developments have come from some of the manufacturers of paper mill equipment:

RICE, BARTON & FALES, INC., Worcester, Mass.

A new save-all trays for fourdrinier paper machines made of silicon-copper alloy. This material is very light and is highly corrosion resistant to the acid waters of a paper machine. The material is extremely strong and well adapted for the purpose.

A new type of end-of-grain suction box cover. The material is selected rock maple impregnated under pressure with tallow, causing the blocks to shrink and increase in weight. The cover is made up of blocks suitably dovetailed together to form a continuous cover. It is claimed that the tallow impregnation acts as a lubricant, thereby reducing the friction of the fourdrinier wire on the blocks.

A new type of beveled gear drive for paper machine. The gears are of the hypoid type, spirally cut with the pinion shaft mounted above the axis of the intake shaft. This permits the mounting of an extra bearing on the pinion shaft and gets away from the usual overhung pinion as it permits the installation of bearings each side of the pinion.

A new type of electric top press roll drive. This new method of driving the top press roll with a d.c. motor makes it possible to secure much closer control of the speed of the top press roll than with the usual mechanical drive.

A new development in electric drive for cylinder paper machine.

A new development in antifriction bearing for steam joints to be used on driers. Any thrust in this steam joint is taken on a thrust ball bearing. The steam joint is supported independently of the piping which is an improvement over attempting to support the steam joint by the steam pipes. They claim less horsepower consumption as a graphite asbestos disc is used in the friction part.

A new type of shake head for fourdrinier shake. This is of the toggle type which permits both the necessary variation in speed of shake and a variation from 0 to ¾ inch in the length of shake without stopping the shake mechanism for adjustment.

EASTWOOD-NEALLY CORPORATION, BELLEVILLE, N. J.

They have developed a small unit for use in resurfacing suction box covers. There is a small handy device into which the suction box cover is placed and means are provided for truing up the surface quickly and accurately.

SHARTLE BROTHERS MACHINE COMPANY, MIDDLETOWN, OHIO

A new type of steam joint for drying cylinders. A combination of an oilless steam joint and a so-called "knee joint" flexible syphon pipe. The flexible knee joint syphon pipe insures that the syphon pipe is always within ½ inch of the bottom of the drier. This syphon pipe may be easily removed or installed and also insures that the syphon pipe remains in the position required either vertically or slightly ahead of the vertical position.

A new type of screen for breaker beater systems. This new screen is of the cradle type with eccentric shake.

MONTAGUE MACHINE COMPANY, TURNERS FALLS, MASS.

An improved type of flat plate suction screen with eccentrics actuating the diaphragm plate. The diaphragm plates are supported at the four corners to prevent weaving. This device operates with much less noise than the old fashioned knocker-type operated diaphragms.

VALLEY IRON WORKS, APPLETON, WISCONSIN

A new type of kneader known as the Valley Voith kneader, fitted with double shafts and designed to handle large quantities of broke.

The Valley Uniflow Inlet. This is a high pressure stream line modification of the old Voith inlet.

Fibrous Raw Materials Testing Developments*

Moisture determination in wood by five types of procedure is described. *(1)* Of these one of the most promising, though undeveloped, is by determination of the dielectric constant since the constants for water and dry wood differ greatly.

Much work has been reported on lignin determination in wood and straw. Ritter and Barbour *(2)* show that pretreatments, as needed, with alcohol, alcohol-benzene, or hot water are suitable for most North American woods. The percentage of methoxyl in extraneous matter, lignin and cellulose, is variable in different woods. Cohen *(3)* and Wiertelak *(4)* shows that previously recommended treatment with NaOH for Australian woods affects the lignin comparatively little under proper conditions and that the resulting lignin values are much more nearly correct than without such pretreatment. The values found can be corrected by knowledge of methoxyl contents of the lignin, original wood, and the alkali extracts. Carbohydrates and proteins are shown to interfere with lignin determination in some cases, *(5)* by the 72 per cent H_2SO_4 methods, making it necessary to reduce the temperature and time of treatment. Two new methods of lignin determination are described, one by extraction with anhydrous HF *(6)* and extraction with acetoacetic ester. *(7)* Lignin can be studied by its ability to form compounds with thioglycolic acid. *(8)* A modified method for methoxyl groups in wood is given by Storch and Wenzel. *(9)* Modifications of the determination of Cross and Bevan cellulose are given by Ritter and Mitchell. *(10)* Cellulose can be determined by removing lignin with ClO_2 and pyridine solution. *(11)* A method for making records of wood cross sections is described. *(12)*

(1) Morath. *Zellstoff-Faser* 32:2-7 (1935); C.A. 29:5263.
(2) *Ind. Eng. Chem. Anal. Ed.* 7:238-40 (1935).
(3) *Australian Council Sci. Ind. Research, Pamphlet* No. 51 (1934); C.A. 29:3154.
(4) *Polish Agr. Forestal Ann.* 34:129-33 (1935); C.A. 29:3827.
(5) Hilpert & Littmann, *Ber.* 68B:16-18 (1935); C.A. 29:2352.
Norman & Jenkins, *Biochem. J.*28:2147-68; C.A. 29:2739.
Komarov, *Bumazhnaya Prom.* 13:No. 12, 32-7 (1934) C.A. 29:3827.
(6) Klatt, *Angew. Chem.* 48:112-4 (1935) C.A. 29:2739.
(7) Lemmel, *Anales. soc. espan. fiz. quim.* 33:389-90 (1935) C.A. 29:7071.
(8) Holmberg, *Ing. Vetenskaps. Akad. Handl.* No. 131, 85 pages C.A. 29:1136.
(9) *Angew. Chem.* 48:513-4 (1935) C.A. 29:6423.
(10) O. S. Forest Products Lab. Mimeograph, R1028 April 1934 CA. 29:6047.
(11) Tang & Wang, *Cellulose Chem.* 16:57-64 (1935); C.A. 29:8323.
(12) Yorston, *Pulp & Paper Mag. Can.* 36:16 (1935); C.A. 29:1627.

M. A. YOUTZ, Chairman.
TAPPI Fibrous Materials Testing Committee.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 17-20, 1936.

Comparative Pulpwood Growing Capacities of Southeast Georgia and the Fog Belt on the North Pacific Coast*

By David E. Hervey[1]

With a new era of expansion in the pulp and paper industry close at hand the comparative advantages and disadvantages of the various pulp producing regions of the United States are of great interest. The problem of securing ample fibrous raw materials at profit—allowing prices is gradually increasing in importance as a controlling factor of production. The southern pine region and the coastal hemlock-spruce region of the Pacific northwest are probably the highest bidders for this new industrial expansion. Intelligent planning for future production in either region will take into account the competitive features of the other.

The purpose of this paper is to show the comparative rate of growth of pulp wood in one definite area within each of the two aforementioned regions. In the southern pine region the area selected was Georgia Survey Region No. 1 (10,000,000 acres in southeast Georgia), and in the Northwest the fog belt area along the coast. These areas are believed to be the most suitable within their respective regions for sustained yield. For sake of comparison the productive capacities of the two regions have been based on 100 per cent normal stocking. In order to arrive at the true production of the present timber generation each must be discounted according to its degree of normalcy. However, it must also be kept in mind that if good forestry is practiced a given area will often substantially exceed in production a comparable unmanaged area of 100 per cent normal stocking. In south Georgia fire is responsible for a low degree of stocking in some places. In the spruce-hemlock coastal belt, however, most of the cut-over land is now supporting a good stand of second growth timber and there is very little of the clean cut non-restocking area. This differential is not weighed in the following computations as no statistics are available for the southern region.

In order to arrive at the maximum annual production under normal conditions for each type, the age of the stand which showed the greatest annual production in cubic feet was selected as the year of harvest. Thus in southeast Georgia the long leaf pine type reached its peak at 50 years, slash pine at 20 years, and loblolly at 40 years. On the north Pacific Coast average annual increment remains practically constant from the ages of 50 to 90 years.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 17 to 20, 1936.

[1] Forest Service, U. S. Dept. of Agriculture, Atlanta, Ga.

TABLE I

WEIGHTED AVERAGE ANNUAL PRODUCTION IN CUBIC FEET OF PULPWOOD FOR ONE ACRE REGION 1. SOUTHEAST GEORGIA[1]

Total Stand—[2]. Site Index (Feet) Total Height @ 50 yrs.	Per cent of Site Index in Region 1 Ga.	Growth in Cu. Ft. per A. per yr.	—Normal Stocking Proportional Vol. for Each Index
Longleaf Pine [3]—42 per cent of the area			
40	.2	19	.038
50	4.2	35	1.470
60	53.3	56	29.848
70	36.4	79	28.756
80	5.0	101	5.050
90	.7	124	.868
100	.2	143	.286
Total	100.%	Weighted Average	66.316
Slash Pine [4]—46 per cent of the area [5]			
50 & 60 [6]	37.3	90	33.570
70	47.0	112	52.640
80	13.8	135	18.630
90	1.6	155	2.480
100	.3	175	.525
Total	100.%	Weighted Average	107.845
Loblolly Pine [7]—12 per cent of the Area			
50 & 60 [8]	11.3	75	8.475
70	20.8	92	19.136
80	33.4	110	36.740
90	19.6	130	25.480
100	12.8	152	19.456
110	2.1	176	3.696
Total	100.%	Weighted Average	112.983

TABLE 1A

Forest Type	Growth in Cubic Feet Per Acre per Year	Per cent of Type in Unit One Georgia	Weighted Annual Growth in Cu. Ft.
Longleaf Pine	66.316	42%	27.85
Slash Pine	107.845	46%	49.61
Loblolly Pine	112.983	12%	13.56
Totals	.....	100%	91.02

[1] 10,000,000 acres in Southeast Georgia.
[2] Trees 1.6 inches DBH and over.
[3] Taken from table 72 USDA Misc. Publ. #50.
[4] Taken from table 36 USDA Misc. Publ. #50.
[5] Slash Pine 45 per cent and Other Pines 1 per cent were classified together.
[6] Index 50 = 1.2 per cent, 60 = 36.1 per cent; no table for index 50 is available.
[7] Taken from table 40 USDA Misc. Publ. #50.
[8] Index 50 = .5 per cent, 60 = 10.8 per cent; no table for index 50 is available.

Georgia Survey Unit Number 1.

From the data compiled in a recent U. S. Forest Service survey of the unit a table showing "Pine Site Indices by Types" has been produced. This in conjunction with USDA Miscellaneous No. 50, "Volume, Yield, and Stand Tables for Second Growth Southern Pines" gives the necessary data. Table I shows the average annual unit production for this area.

Note. The tables given in USDA Miscellaneous No. 50 apply to pure stands of the species and not to the types referred to in the survey table which require only a minimum of 51 per cent stocking of the species from which the type receives its name. (Example: Slash pine requires that 51 per cent or more of the stocking be slash pine). However it is assumed that for all practical purposes the proportion of the stocking of other species in each type runs in the same proportion as the percentage of other types within the survey unit.

This analysis shows that the average acre of normally stocked forest land in Georgia Survey Unit No. 1 will produce 91 cubic feet of pulpwood annually under normal conditions.

North Pacific Coast Fog Belt Region

Cubic foot yield tables for the western hemlock—sitka spruce type have been compiled as a result of the recent Forest Service survey conducted in that region. Also the approximate percentages of each site index based on the plots taken in the survey have been computed. Following is Table II showing the indicated average annual yield in cubic feet of solid wood.

TABLE II.

WEIGHTED AVERAGE ANNUAL PRODUCTION IN CUBIC FEET OF PULPWOOD FOR ONE ACRE IN THE NORTH PACIFIC COAST FOG BELT

Age 50 to 90 Years

Total stand [1]. Site Index (feet) Total height @ 100 years	Per cent of Site Index in the Fog Belt Wash. & Oregon	Growth in cu. ft. per acre per year	Normal Stocking Proportional volume for each index
50 to 69	2.1	60	1.3
70 to 89	6.4	89	5.7
90 to 109	16.9	119	20.1
110 to 129	25.7	155	39.8
130 to 149	20.1	197	39.6
150 to 169	19.8	237	46.9
170 to 189	8.5	268	22.8
190 to 209	.5	296	1.5
Total and Weighted Ave.	100.0%		178 cu. ft.

[1] Trees 1.6 inches DBH and over.

This analysis indicates that the average acre of normally stocked western hemlock—sitka spruce type in the coast fog belt region will produce approximately 178 cubic feet of pulpwood annually under normal conditions or practically twice (1.97 times) as much as the average acre in southeast Georgia. In addition the fog belt area has a decided advantage in percent of stocking. This has not been, to the knowledge of the author, evaluated to date.

In Fig. 1 the areas within the circles represent the comparable areas required for the two regions for a given annual production of pulpwood. It also shows that with factors other than growth being equal the average future haul will be 1.41 times as great in southeast Georgia.

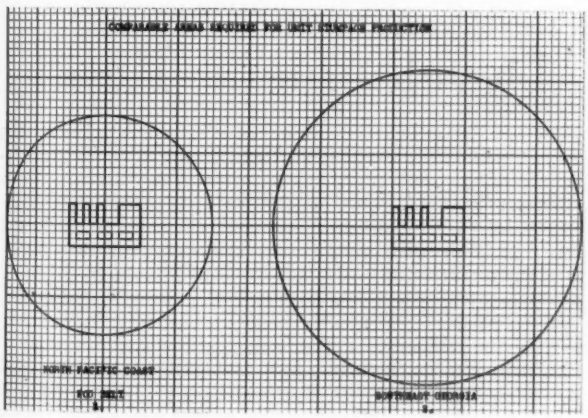

FIG. 1

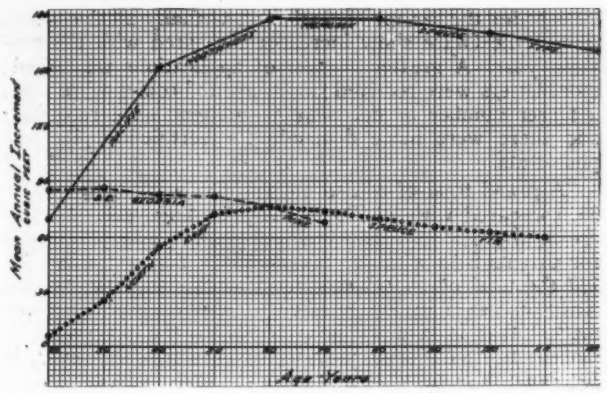

FIG. 2

The accompanying chart, Fig. 2, illustrates the mean annual increment for the two regions and for the spruce fir types in the northeast. (All three pine types are considered harvested together in southeast Georgia).

The uppermost or solid curve represents the spruce hemlock type in the Pacific northwest[a] the dash curve the three pine types in southeast Georgia,[b] and the dotted curve the spruce and fir types in the northeast. The values used in the dotted curve are approximations based on yield tables no. 6, 33, and 39 of USDA Technical Bulletin No. 142, "Second Growth Spruce and Fir in the Northeast" by Walter H. Meyer and his estimate of the percent of each site index within the region which he kindly submitted to the author.

From the foregoing chart it is seen that maximum mean annual increment for southeast Georgia (all types) is 86 cubic feet and for the Pacific northwest 178 cubic feet or a ratio of 1 to 2.1. From this the average future pulpwood haul is computed to be 1.46 times as great in southeast Georgia, ($\sqrt{2.1}$).

The above chart also shows the indicated rotation for maximum production to be approximately half as long in southeast Georgia as in the Pacific northwest. This together with a 1 to 2.1 ratio in mean annual increment indicates that the future logging acreage for unit cut will be approximately 4.2 times as great in southeast Georgia.

[a] Source of data same as for Table II.
[b] Source of data same as for Tables I and Ia.

Patents Committee Development Report*

To quote from the Report of the Commissioner of Patents for the fiscal year ended June 30, 1935:—

"It is natural and inevitable that by reason of its constant and intimate relation with industry the Patent Office should be a sensitive and trustworthy barometer of business. That it is such is verified by the experiences of the last 90 years. Almost every economic disturbance in the United States during this period has left in the Patent Office a record of its presence and disappearance. Thus, for example, the effects of the 'panics' of 1857, 1869, 1873, and 1893 are chronicled in the statistics of the Office. The same is true of the depression just now passing. A few figures may be cited to reveal its trend. In 1929 and 1930, when our national prosperity had reached its peak, the number of applications for patents and trade marks filed in the Office during the fiscal year ended June 30, 1930, was 117,790. Then followed the financial and industrial dislocations which have continued down to the present. Forthwith the business of this Office reflected these conditions. In the fiscal year 1933 the total of applications received was only 79,822, a shrinkage of 32 per cent in the interval between June 30, 1930, and the close of the fiscal year 1933. During the fiscal year 1934 the decline was halted. The volume of new business was approximately equal to that of the preceding year.

"With faith in this barometer which for nearly a century has so unfailingly recorded the coming and going of many financial and industrial storms, there can now be read its signs betokening the approach of fair weather.

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 17-20, 1936.

Except for the receipt of final fees, virtually all the activities of the Office show increases compared with the previous year. A greater number of applications were filed; more letters were received; more printed copies were sold; a larger number of deeds of assignment were recorded; and there were more demands for certified copies and photostats.

"A grand total of 81,248 applications was filed in 1934-35, compared with 79,690 in the preceding year. The increase was 1,558, or nearly 2 per cent. New applications for patents filed with fees numbered 56,832, exceeding by 737 the total of 56,095 received in 1933-34. There was a slight decrease in the number of applications for trade marks; that is, a drop from 16,317 in the preceding 12 months to 15,617 this year. This recession, however, is accounted for by a cessation in the activity surrounding prohibition repeal and is more than offset by a heavy increase—nearly 25 per cent—in the filing of applications for design patents. In the fiscal year 1934 there were 3,811 such applications. In this fiscal year there were 5,069."

A substantial improvement in general business conditions is also indicated by the fact that within the past year a considerable number of examiners left the Patent Office for positions with patent attorneys and corporations. New appointments to the examining corps and promotions in rank and salary were made to fill the vacancies. Increases in salary were made possible by the fact that for the second year the Patent Office operated within its income. The receipts from all sources were $4,264,874.67 while the expenditures totaled $4,153,591.21, leaving a surplus of $111,283.46.

During the year the work of the Patent Office has been brought into such condition that no inventor has to wait more than four months for an office action. It is the Commissioner's aim to bring the work up within sixty days and to make final disposition of all applications within three years after their filing dates.

Certain changes have been made in the Rules of Practice of the Patent Office to simplify interference procedure and to shorten the time it takes to determine such a proceeding.

The membership of the Patent Office Advisory Committee has been increased from 8 to 15. This Committee which was instituted in 1933 has made many constructive suggestions as to improvements in Patent Office practice and procedure.

The United States Senate has ratified the revisions of the International Convention for the Protection of Industrial Property. The treaty as revised awaits the proclamation of the president.

The House of Representatives Committee of Patents under the chairmanship of Dr. Sirovich has for the past several months been investigating all matters pertaining to cross-licensing and patent pooling agreements under existing patents. A large number of witnesses including prominent patent attorneys and officers of large corporations have been heard, and it is expected that a report will soon be presented to Congress.

C. W. Rivise, Chairman
TAPPI Patents Committee.

Personnel Management Development Report

The objectives of this Committee as outlined in the 1935 Year Book are stated thus: "Guidance to students, graduates and apprentices in educational and training programs; health and safety; labor supply; hiring, promotion, transfer and termination of services; turnover; regularizing employment, complaints and grievances; lunchrooms, housing and recreation; group insurance and pensions; and general services for employees."

Probably in no field in which industry is concerned have there been more developments effecting directly or indirectly managerial problems and policies than in the past several months in the field of industrial relations.

Federal social legislation enacted and proposed has had a direct bearing on every industry in the country.

1935 marked the passing of the N.R.A. through a Supreme Court decision and the enactment of the Social Security Act, the National Labor Relations Act, and the Guffey Bill which were passed by Congress.

The Walsh Bill, the Textile Control Bill, the Federal Licensing Bill were other pieces of legislation which would exercise control on all or some industries. The proposed Black 30-Hour Bill may become active again.

Because of the governmental factor in business in employer-employee relations there is a new factor to consider if they are to be maintained and strengthened in a constructive manner.

Our Committee has done practically nothing during the past year because of the uncertainty which exists because of Federal and State legislation. The Chairman has felt that it is better to watch developments rather than attempt to set up any definite recommendations or suggestions at this time.

Many concerns have spent considerable time and money in research, studies, and revamping present systems to meet the changing conditions of the times. There has been considerable thought and effort expended in the consideration of such problems as supervisory training, employment methods, employment records and reports, collective bargaining, group insurance and pension plans, and other services and benefits for employees by employers.

Many agencies of a private and semi-private nature have devoted practically the entire year to getting statistics and making studies for the purpose of assisting industry in solving its problems in the light of these developments.

The American Management Association, the Personnel Research Federation, the National Safety Council, the National Industrial Conference Board, the larger life insurance companies, the Psycological Corporation is but a partial list of organizations concerned in this type of work. The United States Department of Labor through its various divisions has collected and published much pertinent data in the field of labor relations. Some of the more important phases of their work have been studies and statistics relating to such subjects as wages, hours of labor, working conditions, employment, payrolls, cost of living studies, accident prevention, industrial relations, labor legislation, etc.

Our industry through the office of the American Pulp and Paper Association has collected and published from time to time valuable statistics concerning these vital problems within the pulp and paper industry.

The Personnel Management Committee of our Association feels that it is better to make no attempt to duplicate the activities of these agencies, better equipped than we are, but rather to secure statistical information, ideas and conclusions reached by them, and interpret them to our own problems in an individual manner.

H. G. Noyes, Chairman
TAPPI Personnel Management Committee.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING MARCH 28, 1936

CIGARETTE PAPER

Standard Products Corp., *Champlain,* Havre, 13 cs.; Champagne Products Corp., *Champlain,* Havre, 687 cs.; Champagne Products Corp., *Indep. Hall,* St. Nazaire, 90 cs.; H. H. Strauss, *Indep. Hall,* Bordeaux, 50 cs.; R. J. Reynolds Tobacco Co., *Pr. Harding,* Havre, 148 cs.

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Jay Madden Corp., *Pr. Harding,* Hamburg, 99 rolls; Jay Madden Corp., *Deutschland,* Bremen, 300 rolls; Perkins Goodwin & Co., *Deutschland,* Hamburg, 163 rolls.

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C. H. Boulin, *Champlain,* Havre, 3 cs.; Steffens Jones Co., *Nagara Maru,* Kobe, 4 cs.; H. Reeve Angel & Co., Inc., *Nagara Maru,* Yokohama, 5 cs.; U. S. Envelope Co., *Kurama Maru,* Yokohama, 14 cs.; Keuffel & Esser Co., *Deutschland,* Hamburg, 9 cs., 55 rolls; Jay Madden Corp., *Deutschland,* Hamburg, 9 bls.

RAGS, BAGGINGS, ETC.

———, *Cypria,* Barcelona, 175 bls. rags; Bank of N. Y. Trust Co., *Cypria,* Barcelona, 148 bls. rags; Bank of N. Y. Trust Co., *Cypria,* Barcelona, 166 bls. dark cottons; Bank of N. Y. Trust Co., *Cypria,* Barcelona, 77 bls. tares; Bank of N. Y. Trust Co., *Cypria,* Barcelona, 26 bls. bagging; Philadelphia National Bank, *Cypria,* Barcelona, 68 bls. rags; ———, *Cypria,* Valencia, 75 bls. rags; Bank of N. Y. Trust Co., *Cypria,* Valencia, 116 bls. jute waste; Bank of N. Y. Trust Co., *Cypria,* Valencia, 76 bls. rags; E. J. Keller Co., Inc., *American Shipper,* ———, 30 bls. bagging; ———, *American Shipper,* Manchester, 143 bls. rags; ———, *American Shipper,* Liverpool, 40 bls. paper stock; M. Snedeker Corp., *American Shipper,* Belfast, 205 bls. paper stock; ———, *Aurania,* London, 34 bls. rags; The Barrett Co., *Aurania,* London, 83 bls. rags; Banco Coml. Italiane Trust Co., *American Merchant,* London, 32 bls. rags; E. J. Keller Co., Inc., *American Merchant,* ———, 147 bls. bagging; E. J. Keller Co., Inc., *Quaker City,* ———, 66 bls. bagging; A. W. Fenton, Inc., *Quaker City,* Manchester, 19 bls. bagging; Darmstadt Scott & Courtney, *Quaker City,* Manchester 68 bls. rags; Chase National Bank, *Quaker City,* Manchester, 68 bls. new cuttings; ———, *Scythia,* Liverpool, 135 bls. rags; E. J. Keller Co., Inc., *Black Heron,* ———, 300 bls. bagging; E. J. Keller Co., Inc., *Black Heron,* ———, 627 bls. paper stock; F. Stern, *Black Heron,* Rotterdam, 74 bls. rags; Philadelphia National Bank, *Black Heron,* Rotterdam, 413 bls. rags; ———, *Black Heron,* Antwerp, 157 bls. rags; G. W. Millar Co., Inc., *Black Hawk,* Antwerp, 96 bls. rags; R. Blank, *Black Hawk,* Antwerp, 482 bls. rags; F. Stern, *Black Hawk,* Antwerp, 176 bls. rags; N. Schwab & Sons, Inc., *Black Hawk,* Antwerp, 66 bls. cotton waste; D. M. Hicks, Inc., *Black Hawk,* Antwerp, 115 bls. flax paste; Flintkote Co., *Black Hawk,* Antwerp, 157 bls. rags; E. J. Keller Co., Inc., *Black Hawk,* ———, 60 bls. bagging;

Banco Coml. Italiane Trust Co., *Gerolstein,* Antwerp, 102 bls. bagging; Manufacturers Trust Co., *Gerolstein,* Antwerp, 234 bls. rags; ———, *Pr. Harding,* Hamburg, 500 bls. rags; O'Brien Padawer Co., *Nagara Maru,* Kobe, 200 bls. cotton waste; Amtorg Trading Corp., *Max Hoelz,* Odessa, 1,387 bls. rags; Harris Goldman & Co., *Soyo Maru,* Kobe, 50 bls. rags; Royal Manfg. Co., *Soyo Maru,* Kobe, 150 bls. cotton waste; Roger Cotton Products Co., *Soyo Maru,* Kobe, 100 bls. cotton waste; E. A. Stone Co., Inc., *Soyo Maru,* Kobe, 100 bls. cotton waste; ———, *Soyo Maru,* Kobe, 225 bls. cotton waste; Chase National Bank, *Soyo Maru,* Kobe, 300 bls. bagging; O. Smith & Son, *Soyo Maru,* Shanghai, 100 bls. cotton waste; Royal Manfg. Co., *Soyo Maru,* Shanghai, 50 bls. cotton waste; New England Waste Co., *Kurama Maru,* Kobe, 400 bls. cotton waste; Banco Coml. Italiane Trust Co., *Deutschland,* Hamburg, 100 bls. rags; E. J. Keller Co., Inc., *Indep. Hall,* ———, 888 bls. rags; E. J. Keller Co., Inc., *Indep. Hall,* ———, 304 bls. bagging; R. Blank, *Indep. Hall,* Bordeaux, 149 bls. rags; G. W. Millar & Co., Inc., *Indep. Hall,* St. Nazaire, 101 bls. rags; D. M. Hicks, Inc., *Indep. Hall,* Havre, 62 bls. rags.

GLUE STOCK, ETC.

Irving Trust Co., *Deutschland,* Hamburg, 85 bls. glue stock; ———, *Scythia,* Liverpool, 530 bags hide glue.

OLD ROPE

Banco Coml. Italiane Trust Co., *Cristobal Colon,* Pasages, 260 rolls; Banco Coml. Italiane Trust Co., *Cristobal Colon,* Coruna, 24 bls.; Banco Coml. Italiane Trust Co., *Cristobal Colon,* Vigo, 30 bls.; W. Steck & Co., *Black Heron,* Rotterdam, 69 coils; ———, *Gerolstein,* Antwerp, 33 pkgs.

CASEIN

———, *Western World,* Buenos Ayres, 834 bags; ———, *E. Francqui,* Antwerp, 215 bags; ———, *Champlain,* Havre, 667 bags.

WOOD PULP

Bulkley Dunton & Co., *Korsholm,* ———, 600 bls. wood pulp; Perkins Goodwin & Co., *Korsholm,* Gothenburg, 1,778 bls. kraft pulp; Johaneson Wales & Sparre, Inc., *Korsholm,* Gothenburg, 134 bls. sulphite.

WOOD PULP BOARDS

G. H. MacFadden & Bros., *Deutschland,* Hamburg, 350 bls.

WOOD PULP SHEETS

———, *Deutschland,* Bremen, 70 bls.

ALBANY IMPORTS

WEEK ENDING MARCH 28, 1936

Halifax Power & Pulp Co., *Sydfold Sheet,* Harbor, 12,363 bls. ground pulp, 2,759 tons.

BOSTON IMPORTS

WEEK ENDING MARCH 28, 1936

Crocker Burbank Co., *American Merchant,* London, 58 bls. waste paper; ———, *American Merchant,* London, 43 bls. waste paper; G. F. Malcolm, Inc., *Scythia,* Liverpool, 18 cs. tissue paper; ———, *Scythia,* Liverpool, 798 bags hide cuttings; Elliott Addressing Machine Co., *Pr. Taft,* Yokohama, 3 cs. paper; Royal Manfg. Co., *Soyo Maru,* Shanghai, 25 bls. cotton waste; ———, *Soyo Maru,* Kobe, 75 bls. cotton waste; Bulkley Dunton & Co., *Innaren,* ———, 650 bls. wood pulp; Gottesman & Co., Inc., *Tennessee,* Norway, 600 bls. wood pulp; Gottesman & Co., Inc., *Frankfurt,* Czecho-Slovakia, 670 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING MARCH 28, 1936

National Vulcanized Fibre Co., *Black Heron,* Rotterdam, 199 bls. rags; ———, *Black Heron,* Antwerp, 82 bls. rags; Chase National Bank, *Black Heron,* Antwerp, 66 bls. rags; R. Blank, *Black Heron,* Antwerp, 142 bls. rags; E. Butterworth & Co., Inc., *Black Heron,* Antwerp, 29 bls. jute waste; Lang Co., *Black Heron,* Antwerp, 436 bls. rags; Union Waste Co., *Black Heron,* Antwerp, 33 bls. rags; J. M. Hagy Waste Works, *Black Heron,* Antwerp, 69 bls. rags; M. Friedman, *Black Heron,* Antwerp, 118 bls. rags; E. J. Keller Co., Inc., *Black Heron,* ———, 536 bls. rags; E. J. Keller Co., Inc., *Indep. Hall,* ———, 1,113 bls. rags; Castle & Overton, Inc., *Indep. Hall,* Bordeaux, 1,124 bls. rags; Castle & Overton, Inc., *Indep. Hall,* St. Nazaire, 941 bls. rags; Gottesman & Co., Inc., *Hallaren,* Sweden, 1,764 bls. wood pulp; Gottesman & Co., Inc., *Tennessee,* Norway, 600 bls. wood pulp; Royal Manfg. Co., *Soyo Maru,* Shanghai, 50 bls. cotton waste; Tailway Supply & Manfg. Co., *Soyo Maru,* Kobe, 100 bls. thread waste.

BALTIMORE IMPORTS

WEEK ENDING MARCH 28, 1936

S. Shapiro & Sons, *Quaker City,* Manchester, 10 bls. new cuttings; Congoleum Nairn Co., *Black Heron,* Kobe, 463 bls. rags; Congoleum Nairn Co., *Black Heron,* Antwerp, 189 bls. rags; ———, *Soyo Maru,* Kobe, 458 bls. rags; Congoleum Nairn Co., *Indep. Hall,* Bordeaux, 872 bls. rags; Congoleum Nairn Co., *Indep. Hall,* St. Nazaire, 380 bls. rags; Congoleum Nairn Co., *Indep. Hall,* Havre, 678 bls. rags; S. Shapiro & Sons, *Indep. Hall,* Havre, 40 bls. rags; Gottesman & Co., Inc., *Milos,* Sweden, 5,925 bls. wood pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING MARCH 28, 1936

Bulkley Dunton & Co., *Sandhamn,* ———, 1,055 bls. wood pulp; Bulkley Dunton & Co., *Consul Corfitzen,* ———, 2,000 bls. wood pulp.

GALVESTON IMPORTS

WEEK ENDING MARCH 28, 1936

Burka Bagging Co., *Kurama Maru,* Kobe, 400 bls. bagging.

HOUSTON IMPORTS

WEEK ENDING MARCH 28, 1936

Darmstadt Scott & Courtney, *Kurama Maru,* Kobe, 400 bls. bagging.

Prices of Pulpwood in Sweden Drop

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., March 18, 1936—Prices of pulpwood in Sweden during the fourth quarter of 1935 dropped slightly as compared with those of the last three months of 1934, according to Commercial Attache Charles E. Dickerson, Jr., Stockholm. During the fourth quarter of 1935, pulpwood delivered at the mills was quoted at 6.50 crowns and 8 crowns per cubic meter as against 7 crowns and 8.50 crowns, respectively during the last quarter of 1934.

Pulpwood cutting for all of Sweden during 1935 is estimated by the Board of Crown Land and Forests at 7,760,600 cubic meters for pine pulpwood and 18,390,000 cubic meters for spruce pulpwood.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, April 1, 1936.

During the past week trading in the local paper market was moderately active. Shipments, of course, have been delayed somewhat due to the curtailment of operations on account of the floods. Sales forces of the leading paper organizations continue optimistic over the future outlook. Prices are generally holding to formerly quoted levels.

The position of the newsprint paper market is practically unchanged. Advertising lineage and circulations of the leading newspapers are running ahead over last year's record and sentiment in the industry is more favorable than for some time past. It is generally felt that the price situation is improving.

Business in the fine paper market is fairly active. Quotations on book paper have been advanced from $3 to $5 per ton and on coated paper from $5 to $11 per ton, effective April 1. Tissues are moving in fairly good volume, with the approach of Easter. The coarse paper market is steady to firm.

Mechanical Pulp

The ground wood pulp market is exhibiting a fairly strong undertone. Manufacturing operations in North America and abroad are still practically keyed to consumption and the statistical position of the industry is considered sound. Prices of mechanical pulp are holding to schedule, in most instances.

Chemical Pulp

Steadiness prevails in the chemical pulp market. While demand for the various domestic and imported grades is not quite so active, this situation is attributed to the temporary effect of the flood conditions. Kraft pulp continues very firm, while bleached sulphite is also displaying strength.

Old Rope and Bagging

No radical changes transpired in the old rope market during the past week. Paper mill demand for domestic and foreign old manila rope is restricted. Mixed strings are moving in fair volume for the season. The bagging market is rather quiet. Scrap and gunny bagging are in moderate request. Prices remain unchanged.

Rags

The domestic rag market is fairly buoyant, due to the reports of damaged mill stocks. New cotton rags are stronger. No. 1 white shirt cuttings are attracting more interest, both at home and abroad. Roofing grades are rather spotty. The imported rag market is practically unchanged. Prices are fairly steady.

Waste Paper

Board mill demand for the lower grades of waste paper is rather light. Quotations on strictly folded news and No. 1 mixed paper are easier. Demand for the higher grades of waste paper is well sustained. White envelope cuttings and hard and soft white shavings are holding up well. Prices are firm.

Twine

Conditions in the local twine market are little changed. Demand for the various varieties is fairly persistent, influenced to some extent by the approach of Eastertide. Supplies are moving into consumption freely. Prices are generally holding to schedule, despite keen competition for desirable orders.

Turpentine and Rosin Statistics

The Bureau of Chemistry and Soils, United States Department of Agriculture, is mailing its annual questionnaires to producers, dealers and consumers of turpentine and rosin. This questionnaire asks for individual reports on production or consumption, as the case may be, and the total stocks on hand as of March 31, 1936, at all the stills, plants and yards.

These figures are collected at the requests of producers and users of turpentine and rosin. They are collected in order to enable all who are interested to know definitely how much has been produced, how much has been used and how much is on hand and available to meet the needs of business in the immediate future.

These figures tell the producer what he should produce to meet the probable needs of the consumer. They tell the consumer to what extent he can depend on getting his needed supply of these necessary raw materials. Complete, accurate, up-to-date figures on production, consumption and supply tend to stabilize business.

The Bureau of Chemistry and Soils is making every effort to have its annual report in the hands of the industry not later than May 31, 1936. To insure publication by this date the Bureau is urging that the questionnaire be filled out and mailed by April 15, 1936. It will require the remaining six weeks to tabulate the figures, print and mail the report.

No figures in individual reports will be made public. The Bureau of Chemistry and Soils asks that every producer, dealer, or consumer of turpentine and rosin who does not receive a questionnaire write for it. It will be mailed promptly.

Materials Handling Equipment

A new, fully illustrated, colored folder on materials handling equipment, showing many standard and special devices for handling practically any product, merchandise, goods, or materials, that is manufactured, stored, shipped, or handled, has just been issued by Lewis-Shepard Company, Watertown, Mass., copies of which may be had free on application. This new folder, No. 318, is in fact, really an illustrated textbook on modern materials handling methods and equipment for handling practically anything, anywhere.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, April 1, 1936.

BLANC FIXE.—Conditions in the blanc fixe market are fairly satisfactory. Prices are holding to schedule, without difficulty. The pulp is quoted at $42.50 to $45 per ton, in bulk; while the powder is selling at 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—The position of the bleaching powder market is practically unchanged. Contract shipments are moving regularly. Prices remain steady to firm. Bleaching powder is quoted at $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN.—The casein market is strong. Domestic standard ground is quoted at 15 and finely ground at 15½ cents per pound. Argentine and French standard ground are selling at 14 cents and finely ground at 14¼ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Some improvement transpired in the caustic soda market. The contract movement is normal for the season. Solid caustic soda is quoted at $2.55 to $2.60; while the flake and ground are selling at $2.95 to $3 per 100 pounds, in drums, at works.

CHINA CLAY.—The china clay market is exhibiting a fairly strong undertone. Prices are holding to schedule. Imported china clay is quoted at $13.50 to $21 per ton, ship side; while domestic paper clay is selling at $6.50 to $12 per ton, at mine.

CHLORINE.—Paper mill demand for chlorine is fairly persistent. The contract movement is well up to average. Prices are maintained at former levels, without difficulty. Chlorine is quoted at $2.15 to $2.55 per 100 pounds, in tank cars, at works.

ROSIN.—The rosin market is rather spotty. Paper making gum rosin is quoted at $4.30 and wood rosin at $4.25 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $2.54 per 100 pounds, in tank cars, at works.

SALT CAKE.—Steadiness prevails in the salt cake market. Contract shipments are moving freely. Prices are firm. Salt cake is quoted at $12 to $13; chrome salt cake at $11 to $12 per ton, at works. Imported salt cake is selling at $12 to $13 per ton, ship side.

SODA ASH.—The soda ash market is displaying strength. Shipments against contract are going forward in good volume. Prices are steady. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.20; and in barrels, $1.50.

STARCH.—No radical changes were reported in the starch market. Demand from the paper mills is fairly active. Prices remain unchanged. Special paper making starch is quoted at $3.10 per 100 pounds, in bags; and at $3.37 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—While the sulphate of alumina market is moderately active, prices are steady to firm. The contract movement is seasonal. Commercial grades are quoted at $1.35 to $1.60 and iron free at $2 to $2.25 per 100 pounds, in bags, at works.

SULPHUR.—The sulphur market is steady. Yearly contracts are quoted at $18 per long ton, in bulk, on orders of 1,000 tons, or over and at $20 per ton on any smaller quantity. On spot and nearby carloads, the quotation is $21 per ton. All quotations in car lots, at mine.

TALC.—Paper mill demand for talc continues along routine lines. Shipments against contract are moving in fair volume for the time of year. Domestic talc is quoted at $16 to $18 per ton, at eastern mines; while imported talc is selling at $23 to $30 per ton, on dock.

Market Quotations

Paper

Rag Content Bond & Ledgers— Delivered Zone 1	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers— Delivered Zone 1	Bonds	Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

Book, Cased—		
S. & S. C.	5.35 @	5.75
S. & S. C. Litho.	5.60 @	6.00
M. F.	5.10 @	5.50
Coated and Enamel	5.90 @	6.55
Coated Litho	5.90 @	6.55
Tissues—Per Ream—		
White No. 1	.82½ @	—
White No. 1 M. G.	.77½ @	—
White No. 1½	.62½ @	—
White No. 2	.60 @	—
Anti-Tarnish M. G.	.67½ @	—
Colored	.80 @	—
Kraft	.67½ @	—
Manila	.60 @	—
Unbleached Toilet	2.60 @	3.30
Bleached Toilet	3.94 @	5.26
Paper Towels—		
Unbleached	2.10 @	3.35
Bleached	3.30 @	3.70
Manila—		
No. 1 Jute	9.00 @	9.25
No. 2 Jute	7.75 @	8.50
No. 1 Wood	4.00 @	5.25
No. 2 Wood	3.50 @	4.00
Fibre Papers—		
No. 1 Fibre	4.25 @	5.50
No. 2 Fibre	4.00 @	4.75

(Delivered New York)

News, per ton—		
Roll, contract	41.00 @	—
Sheets	46.00 @	—
Kraft—		
No. 1 Northern	4.12½ @	4.75
Standard	4.00 @	—
Southern	3.87½ @	—
Boards—per ton—		
News	37.50 @	—
Chip	37.50 @	—
Sgl. Mla. Ll. Chip	42.50 @	45.00
Jute Lined Chip	42.50 @	45.00
Kraft Liners	57.50 @	60.00
White Pat. Coated	55.00 @	57.50
Binders Boards	67.00 @	75.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—		
Moist	22.00 @	23.00
Dry	22.00 @	23.00

(F. o. b. Mill)

No. 1 Domestic and Canadian	18.00 @	24.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—		
Division 1	2.60 @	2.90
Division 2	2.55 @	—*
Division 3	2.50 @	—*
Prime Qualities—		
Class 1, All Prime Easy Bleaching	2.05 @	—*
Other Than Easy Bleaching—		
Class 2, Higher than Standard	2.00 @	—*
Class 3, Standard	1.95 @	—*
Class 4, Lower than Standard	1.90 @	—*

(On Dock, Atlantic Ports)

Kraft No. 1	1.85 @	1.95
Kraft No. 2	1.70 @	1.80

(F. o. b. Pulp Mill)

Kraft Domestic	1.80 @	1.90

(Delivered)

Soda Bleached	2.60 @	—

* Add 60 Cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	8.00 @	8.15
Silesias No. 1	5.50 @	5.75
New Unbleached	8.25 @	8.50
New Soft Blacks	3.75 @	4.00
Blue Overall	5.75 @	6.00
Fancy	3.25 @	3.50
Washables	2.25 @	2.50
Mixed Khaki Cuttings	3.25 @	3.50
O. D. Khaki Cuttings	4.00 @	4.25
Men's Corduroy	2.00 @	2.25
New Mixed Blacks	2.75 @	3.00

Old Rags

White, No. 1—		
Repacked	3.00 @	3.50
Miscellaneous	2.75 @	3.25
White, No. 2—		
Repacked	1.75 @	2.25
Miscellaneous	1.50 @	1.75
Thirds and Blues—		
Repacked	1.75 @	1.85
Miscellaneous	1.45 @	1.55
Roofing Rags—		
No. 1	2.00 @	2.10
No. 2	1.80 @	1.90
No. 3 (bagging)	1.70 @	1.80
No. 4	1.70 @	1.80
No. 5A	1.10 @	1.20

Foreign Rags

New Rags

New Dark Cuttings	2.00 @	2.25
New Mixed Cuttings	1.80 @	1.90
New Light Silesias	3.75 @	4.00
Light Flannelettes	4.25 @	4.50
New White Cuttings	6.50 @	7.00
New Light Oxfords	3.25 @	3.50
New Light Prints	2.75 @	3.00

Old Rags

No. 1 White Linens	7.50 @	8.00
No. 2 White Linens	6.50 @	7.00
No. 3 White Linens	4.50 @	5.00
No. 4 White Linens	2.25 @	2.50
No. 1 White Cotton	4.25 @	4.75
No. 2 White Cotton	3.25 @	3.75
No. 3 White Cotton	2.50 @	2.75
No. 4 White Cotton	1.90 @	2.15
Extra Light Prints	2.00 @	2.25
Ord. Light Prints	1.75 @	1.85
Med. Light Prints	1.55 @	1.65
Dutch Blue Cottons	2.00 @	2.25
French Blue Linens	2.30 @	2.40
German Blue Linens	2.15 @	2.25
German Blue Cottons	1.70 @	1.80
Checks and Blues	1.70 @	1.80
Linsey Garments	2.50 @	2.60
Dark Cottons	2.00 @	2.35
Old Shopperies	1.00 @	1.05
New Shopperies	1.25 @	1.35
French Blues	2.00 @	2.25

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	2.20 @	2.25
Domestic	2.25 @	2.35
Wool Tares, light	1.75 @	2.00
Wool Tares, heavy	2.25 @	2.35
Bright Bagging	1.75 @	1.80
Manila Rope—		
Foreign	2.40 @	2.50
Domestic	2.25 @	2.30
Mixed Strings	.85 @	1.00
New Burlap Cut	2.00 @	2.25
Hessian Jute Threads—		
Foreign	2.60 @	2.75
Domestic	2.80 @	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—		
White Envelope Cuttings	2.65 @	2.75
Ordinary Hard White No. 1	2.25 @	2.35
Hard White No. 2	2.10 @	2.20
Soft White No. 1	2.05 @	2.15
Flat Stock—		
Stitchless	.65 @	.75
Over issue Mag	.65 @	.75
Solid Flat Book	.55 @	.60
Crumpled No. 1	.35 @	.40
Solid Book Ledger	1.50 @	1.65
Ledger Stock	.85 @	.90
New B. B. Chips	.30 @	.35
Manilas—		
New Env. Cut	1.75 @	1.85
New Cuttings	1.35 @	1.45
Bogus Wrapper	.40 @	.50
Old Kraft Machine—		
Compressed bales	1.25 @	1.35
News—		
No. 1 White News	1.45 @	1.50
Strictly Overissue	.50 @	.55
Strictly Folded	.35 @	.40
No. 1 Mixed Paper	.27½ @	.32½

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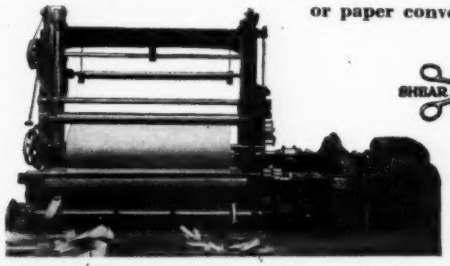

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Twines

(F. o. b. Mill)

(Soft Fibre)

Coarse Polished—			
India	.13¼	@	.15¼
Beig. White Hemp	.14¼	@	.17¾
India Compress	.13¾	@	.14¼
Fine Polished—			
Fine India	.21½	@	.23½
Special	.19½	@	.21½
Unpolished—			
Box	.12	@	.12½
Paper Makers	.09	@	.13½
Tube Rope	.10	@	.15½
Wall Paper	.11	@	.14½
Wrapping	.15½	@	.21
Special	.15	@	.15½
Soft Fiber Rope	.12½	@	.12¾

(Hard Fibre)

Bond	.12	@	.20½
Anchor	.11½	@	.13
Manila	.21	@	.2[illegible]

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.12	@	.40
Water Marked Sulphite Bond	.06¾	@	.11
Sulphite Bond	.05½	@	.07¼
Superfine Writing	.18	@	.24
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05½	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.25
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09

(Delivered Central Territory)

News, per ton—			
Rolls, contract	42.00	@	—
Sheets, open	47.00	@	—
Boards, per ton—			
Plain Chip	46.50	@	—
Solid News	50.00	@	—
Manila Lined Chip	55.00	@	—
Patent Coated	65.00	@	—
Container Lined—			
85 Test, per 1000 sq. ft.			1.70
100 Test, per 1000 sq. ft.			1.85

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings	1.70	@	2.00
No. 1 Hard White	1.40	@	1.65
No. 1 Soft White	1.25	@	1.50
Ledger & Writings	.70	@	.80
Solid Books	.60	@	.70
Blanks	1.00	@	1.05
Krafts	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.40	@	.50
Overissue News	.40	@	.45
Old Newspapers—			
No. 1	.30	@	.35
No. 1 Mixed Paper	.25	@	.30
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

Rag Content Bond & Ledgers— Delivered Zone 1	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers— Delivered Zone 1	Bonds	Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

F.o.b. Mill

Book, M. F.	5.00	@	—
Book, S. S. & C.	5.25	@	—
Book, Coated	6.15	@	—
Coated Lithograph	6.15	@	—
No. 1 Jute Manila	10.50	@	—
Manila Sul., No. 1	6.75	@	—
Manila No. 2	4.25	@	—
No. 1 Kraft	6.00	@	—
Southern Kraft	5.00	@	—
News Print Rolls	40.00	@	—
Straw Board	40.00	@	45.00
News Board	40.00	@	—
Chip Board	37.50	@	—
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.09	@	.09½
New White, No. 2	.05½	@	.06
Light Silesias	.05½	@	.06½
Silesias, No. 1	.04½	@	.05
Black Silesias, soft	.03½	@	.04
New Unbleached	.06½	@	—
Washable, No. 1	.02	@	.02½
Blue Overall	.06	@	.06½
Cottons—According to grades—			
Washable, No. 2	.02½	@	.04½
New Blue	.02	@	.02½
Fancy	.03	@	—
New Black Soft	.04¼	@	.04¾
New Light Seconds	.04	@	.04¼
New Dark Seconds	2.00	@	—
Khaki Cuttings—			
No. 1 O. D.	.04½	@	.05
No. 2 Mixed	.03½	@	.04½
Corduroy	.02¼	@	.02½
New Canvas	.04½	@	.05
New Black Mixed	.02¼	@	.02½

Domestic Rags (Old)

White No. 1—			
Repacked	4.00	@	4.50
Miscellaneous	3.00	@	3.50
Thirds and Blues—			
Miscellaneous	2.00	@	2.25
Repacked	2.50	@	2.75
Black Stockings (Export)	4.50	@	5.00
Roofing Stock—			
Foreign No. 1	2.35	@	—
Domestic No. 1	1.80	@	1.85
Domestic No. 2	1.60	@	1.65
Roofing bagging	1.45	@	—

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	2.00	@	—
Domestic	2.25	@	—
Manila Rope	2.75	@	3.00
Sisal Rope	1.75	@	2.00
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	2.00	@	2.50
No. 2	.90	@	1.00
Wool Tares, heavy	3.00	@	3.25
Mixed Strings	1.00	@	1.10
No. 1 New Light Burlap	3.00	@	3.50
New Burlap Cuttings	2.50	@	2.75

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.30	@	2.40
No. 2 Hard White	2.10	@	2.20
No. 1 Soft White	1.80	@	1.85
No. 2 Soft White	1.40	@	1.45
No. 1 Mixed	—	@	.85
Solid Ledger Stock	1.50	@	1.60
Ledger Stock, white	1.15	@	1.20
Ledger Stock, colored	.85	@	.90
No. 1 Books, heavy	.65	@	.70
Manila Cuttings	1.50	@	1.60
Print Manila	.50	@	.60
Container Manila	.50	@	.60
Kraft Paper	1.10	@	1.20
No. 1 Mixed Paper	.35	@	.40
Straw Board Chip	.40	@	—
Binders Board Chip	.40	@	—
Corrugated Board	.60	@	.65
Overissue News	.60	@	—
Old Newspapers	.40	@	—

BOSTON

Paper

Rag Content Bond & Ledgers— Delivered Zone 1	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers— Delivered Zone 1	Bonds	Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

F.o.b. Mill

Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04½	@	.05
No. 2 Kraft	.04	@	.04¾

(Delivered New England points)

Southern Kraft	.03¾	@	—
News Print Rolls	39.50	@	—
Straw Board, rolls	.009	@	35.00
Filled News Board	40.00	@	45.00
Chip Board	37.50	@	40.00
Single Manila Lined Chip	47.50	@	52.50
Single White, Patent Coated News Board (Bender)	55.00	@	65.00
Wood Pulp Board	70.00	@	75.00
Binder Boards (Standard Grade)	67.00	@	75.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.00	@	2.20
No. 1 Soft White	1.75	@	1.90
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.40	@	1.50
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.85	@	.90
No. 1 Books, heavy	.60	@	.70
No. 1 Books, light	.50	@	.60
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.50	@	1.60
No. 1 Old Manila	.60	@	.65
White Blank News	1.30	@	1.35
No. 1 Kraft	1.20	@	1.25
Mixed Papers	.22½	@	.25
Print Manila	.47½	@	.50
Container Manilas	.27½	@	—
Old Newspapers	.27½	@	.32½
Overissue News	—	@	.40
Box Board Chips	—	@	.25
Corrugated Boxes	.40	@	.45
Kraft corrugated boxes	.95	@	1.00
Screening Wrappers	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.25	@	2.35
Domestic	2.25	@	2.35
Transmission Rope	1.30	@	1.40
Jute Rope	2.00	@	2.25
Jute Carpet Threads	1.00	@	1.10
Gunny No. 1—			
Foreign	2.05	@	2.15
Domestic	1.90	@	2.00
Bleachery Burlap	4.50	@	5.00
Scrap Burlap—			
Foreign	2.10	@	2.15
Domestic	1.75	@	1.90
Scrap Sisal	2.00	@	2.25
Scrap Sisal for Shredding	2.25	@	2.50
Wool Tares, heavy	2.25	@	2.35
New Burlap Cuttings	2.25	@	2.35
Australian Wool Pouches	2.85	@	3.00
Heavy Baling Bagging	2.50	@	2.75
Paper Mill Bagging	1.75	@	2.00
Bagging No. 2	1.25	@	1.50

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.01¾	@	.02
New White No. 1	.08	@	.08¼
New White No. 2	.04	@	.04¼
Silesias No. 1	.05½	@	.06
New Black Silesias	.03½	@	.04¼
Soft Unbleached	.07¼	@	.07¾
Blue Cheviot	5.25	@	5.50
Fancy	.02½	@	.02¾
Washable	.0165	@	.0170
Cottons—According to grades—			
Blue Overalls	5.50	@	6.00
New Black, soft	.04	@	.04¾
Khaki Cuttings	.04	@	.04¼
O. D. Khaki	.04	@	.04¼
Corduroy	.01¾	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	—	@	.06¼

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues	1.75	@	2.25
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings	3.90	@	4.00
Roofing Stock—			
No. 1	2.00	@	2.10
No. 2	1.90	@	1.95
No. 3	1.60	@	1.70

Foreign Rags

(F. o. b. Boston)

Dark Cottons	1.75	@	1.90
New White Shirt Cuttings	6.50	@	6.75
Dutch Blues	2.25	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.90	@	2.00
Old Linsey Garments	2.25	@	2.50
New Silesias	4.75	@	5.25

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.11	@	—
No. 2 Sulphite	.08¾	@	—
No. 1 Colored	.12	@	—
No. 2 Colored	.09	@	—
Ledgers			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.50	@	—
No. 2 M. F. (Carloads)	6.00	@	—
No. 3 M. F. (Carloads)	6.00	@	—
No. 1 S. C. (Carloads)	7.00	@	—
No. 2 S. C. (Carloads)	6.50	@	—
No. 3 S. C. (Carloads)	6.50	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown	4.75	@	—
White Wrap	3.50	@	—
"B" Manila	4.80	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft, No. 2	5.40	@	—

(F. o. b. Cars Toronto)

News, per ton—			
Rolls (contract)	40.50	@	—
Sheets	45.00	@	—

Pulp

Ground wood	27.00	@	—
Unbleached Sulphite	42.00	@	—
Book (Class 1)	58.00	@	—
Writing (Class 2)	59.00	@	—
Select (Class 3)	60.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.25
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut	1.25	@	1.40
Printed Manilas	.50	@	—
Kraft	1.00	@	1.60
News and Scrap—			
Strictly Overissue	.55	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.07½	@	.07½
Fancy Shirt Cuttings	.02¼	@	.02½

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